McKinsey Global Institute

Reinvigorating industry in France

October 2006

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The McKinsey Global Institute, founded in 1990, is an independent economics think tank within McKinsey & Company whose primary purpose is to undertake original research and develop substantive points of view on critical economic issues facing businesses and governments around the world.

We seek to help business leaders and policy makers understand the evolution of the global economy, improve performance and competitiveness, and provide a fact base for decision making at both the national and international level.

MGI's work is a unique combination of two distinct disciplines: economics and management. Economists often have limited access to the practical problems facing senior managers, while senior managers often lack the time and incentive to look beyond their own industry to the larger issues of the global economy.

Led by MGI Director Diana Farrell, each research project includes a team of McKinsey consultants from around the world who serve six- to 12-month assignments before returning to client work. Our research teams work with a number of leading economists, including Nobel laureates, who serve as McKinsey Global Institute Academic Advisors. Martin Baily, a senior fellow at the Institute of International Economics and former Chairman of President Clinton's Council of Economic Advisors, is currently an MGI senior advisor.

The Global Institute is based in San Francisco and has a presence in Washington, D.C., New York, London, and Shanghai.

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Foreword

Does French industry have a future? One might conclude not, judging by the consternation caused in the country by offshoring and factory closures. Faced with the growing power of emerging countries in global markets, and the development of the service sector in its home market, does a nation such as France, long characterized by its strong industrial culture, risk seeing the decline, and even disappearance, of its industrial base?

McKinsey's French office, in collaboration with the McKinsey Global Institute (MGI), undertook a research project to shed some new light on these questions. François Bouvard, Diana Farrell, and Eric Labaye, senior partners of McKinsey, led the project, and Olivier Velter, engagement leader, was responsible for its daily management. The team took advantage of our sector experts from around the world—to name but a few in France, Christophe Bédier, Matthieu Pélissié du Rausas, and Olivier Sibony. Frédéric Lemoine, senior advisor to McKinsey in France, was also closely associated with the project. This document also reflects discussions with a number of French economists, notably Lionel Fontagné and Jean-Hervé Lorenzi, with company leaders and senior public policy makers.

Our intention in this document is both to present factual elements that can be used to inform and encourage public debate on this issue and to suggest some possible courses of action for business and government. In offering up these viewpoints, we hope to help both public authorities and the business world to reinvigorate French industry.

As with all MGI research, we would like to emphasize that this study is independent and has not been commissioned or sponsored in any way by any business, government, or other institution.

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October 2006

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Executive summary

The picture that can be painted of French industry today looks rather contrasting—a relative industrial decline, but a more worrying loss of competitiveness. If the industrial sector is to regain its world-class performance level and once again be a pillar of a dynamic French economy, it is essential to understand the competitiveness and attractiveness issues it faces, and then address them through combined private and public efforts.

Industrial decline in France: myth or reality?

For the past 25 years, France has experienced a marked loss in industrial jobs and a fall in industry's share of added value in its economy. Nevertheless, seeing a steep decline in such trends would be the product of an over-pessimistic vision.

More than the relative loss of the industry's share of value in the national economy–which mostly results from the rise of services–concerns are triggered by a simultaneous decline in its competitiveness[1] and, to a lesser extent, its attractiveness[2]. Clearly, the country cannot avoid an in-depth examination of its industry's very fundamentals with their inherent structural weaknesses.

Over the past decade, France has experienced a simultaneous decline in employment, margins, and "productive" investment in most industrial sectors, as well as a slowing of productivity gains. It is this latter development that is most worrying, as productivity growth determines an economy's competitiveness. While France still ranks fifth among the world's leading exporters of industrial goods, the gap compared with some of its main competitors is widening. For example, since 1995, France's market share of world exports has decreased three times more than Germany's. The causes of this decline should be tackled urgently, since two out of every five industrial jobs in France depend on exports.

In its domestic market, too, French industry has lost ground. Its poor performance has materialized through a rise in import penetration levels across all sectors. As a result, France now shows one of the highest proportion of industrial imports, whereas it has not yet experienced the overwhelming influx of imports from low-cost countries affecting the rest of developed nations.

The repercussions from this lack of industrial dynamism go well beyond the industrial sector to affect the entire French economy. If France is to confront the challenges of globalization effectively, it must be able to draw on the dynamism of both its service and industrial sectors.

[1] We define this as the capacity to maintain or capture market share profitably, both in export and domestic markets.
[2] We define this as the capacity to retain, and attract, jobs, investment, and high value-added companies.

For France, developing a high-performance, competitive industrial sector is essential for two main reasons. First, a high-performance industrial sector would give France an outstanding potential for job creation, that could be not only maintained, but also created on its soil. We estimate that, if France had been able to maintain its competitiveness level since 1995, it would have approximately 720,000 more jobs than it does today[3].

Second, because France has no alternative either in the short- or medium-term that can compensate for the weakening of its industry. France's industrial sector still generates some 22 percent of jobs and of added value in the overall economy, retains a significant presence in overseas trade with €330 billion in exports, and contributes to the creation and diffusion of innovation.

A new framework for analysis and action

There is ample justification for moving quickly to redress French industry, both domestically and internationally. However, it remains the case that competitiveness issues differ widely among the more than 250 industrial sectors identified by France's National Institute for Statistics and Economic Studies (INSEE). France faces not just threats, but opportunities. We have therefore developed a "framework for analysis and action", which enables the broad spectrum of French industry to be segmented into a smaller number of sector groups, which each share common issues, and could therefore profit from similar courses of remedial action. We have named our five sector groups: "innovation-driven"; "strongly branded"; "regional"; "at a crossroads"; and "highly exposed".

The first two groupings account for 21 percent of French exports, but only 12 percent of jobs, giving legitimate reason to hope that they may have growth potential. The "regional" sectors, whose products are not easily or often transportable, account for almost 30 percent of jobs and are characterized (apart from energy) by a trade surplus. In the case of this grouping, the question is how to improve upon its commercial dynamism. France's "highly exposed" sectors are subject to growing pressure from distant competitors, and represent nearly 20 percent of jobs. Without casting doubt on the prospects of success for individual companies, we can broadly expect these sectors to have to make adjustments in the global context. Finally, the "at a crossroads" group, subjected to competition on both price and innovation, is critical since—the future of the 40 percent of jobs the companies in this group generate will depend on their ability to meet the double challenge of cost and innovation.

Analyzing representative sectors from these five groups allowed us to identify specific priorities for each one, which both the private and the public sector should work to implement.

Six courses of action for reinvigorating France's industrial base

Beyond these sector-specific priorities, we have also outlined six cross-sectoral courses of action, which we believe may help strengthen industry in France. The first two are macroeconomic in nature and in the government's purview. They are not new, but to date have only been partially implemented: they include adopting "smart" regulations and optimizing the level of

[3] This figure may be at the high end of realistic estimates, however it gives a sense of the realities of globalization and the interest that French companies have in operating globally, given what is at stake in terms of competitiveness.

competition for each sector, as well as improving the fluidity of the labor market and the employability of the working population. Two more courses of action that we suggest mainly concern the private sector, although they presuppose backup support from the government: to launch a "Lean Initiative" [4] to make a quantum leap in productivity, and to take advantage of France's proximity to the European market. Finally, two strategies require close cooperation between private and public players—first, to focus resources and efforts on high-potential sectors and areas of excellence in both the public and private sectors; second, to decompartmentalize and stimulate innovation.

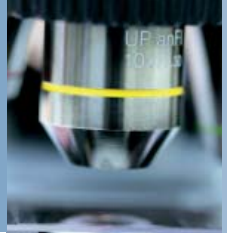
We believe that, by working in tandem, private players and the public authorities will be able to ensure the future of French industry. Our analyses and proposed courses of action on these pages aim to contribute to this effort.

[4] Lean or "just-in-time" manufacturing represents one of the most successful approaches for improving operational efficiency. Its principles are described in page 42 .

SUMMARY REPORT


UP anFl

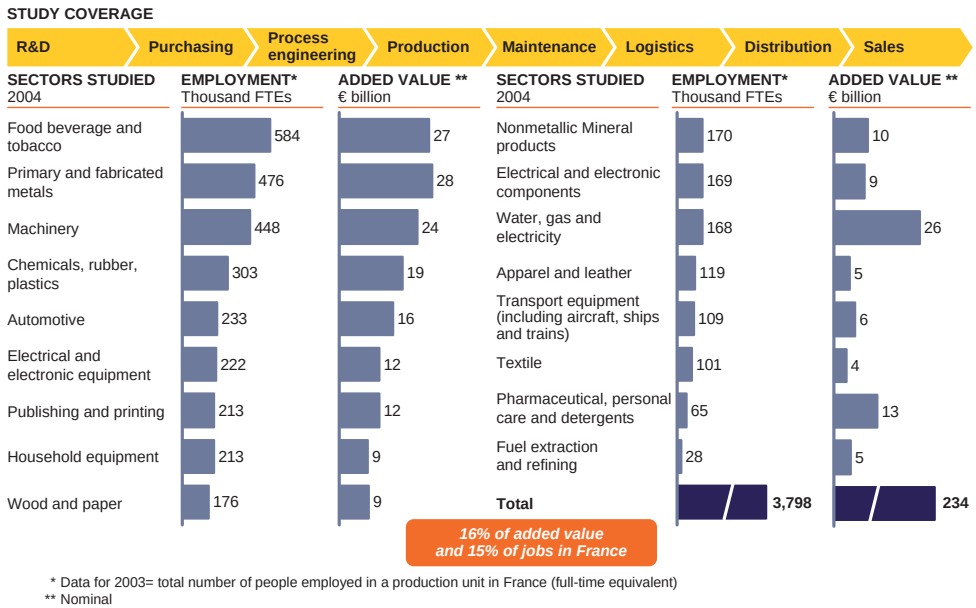
1 The decline of industry in France: myth or reality?



1 - The decline of industry in France: myth or reality?

France currently ranks as the fifth largest industrial power in the world. Its industry is characterized by great variety, with many businesses and activities related to the design, manufacturing, and distribution of products in more than 250 different sectors, according to INSEE. Companies operating in France range widely in terms of size, and are as likely to be foreign-owned[5] as French-owned. Overall, French industry represents a sizable share of the economy, accounting for about 15 percent of direct employment and 16 percent of added value *(Exhibit 1)*.

Exhibit 1: France's industrial base—activities and sectors covered by our study



* Data for 2003= total number of people employed in a production unit in France (full-time equivalent)
** Nominal
Source: INSEE national accounts, Base 2000; McKinsey analysis

[5] Foreign companies based in France represented 33 percent of direct industrial jobs in January 2002.

1.1 - A relative industrial decline

For at least 25 years, the French economy, like those of all major industrialized countries, has seen a reduction in the amount of direct employment generated by industry (both in absolute terms and as a percentage of total employment), and a fall in industry's share of added value in the total economy. However, what has often been described as industrial "decline" needs to be seen in context *(Exhibit 2)*.

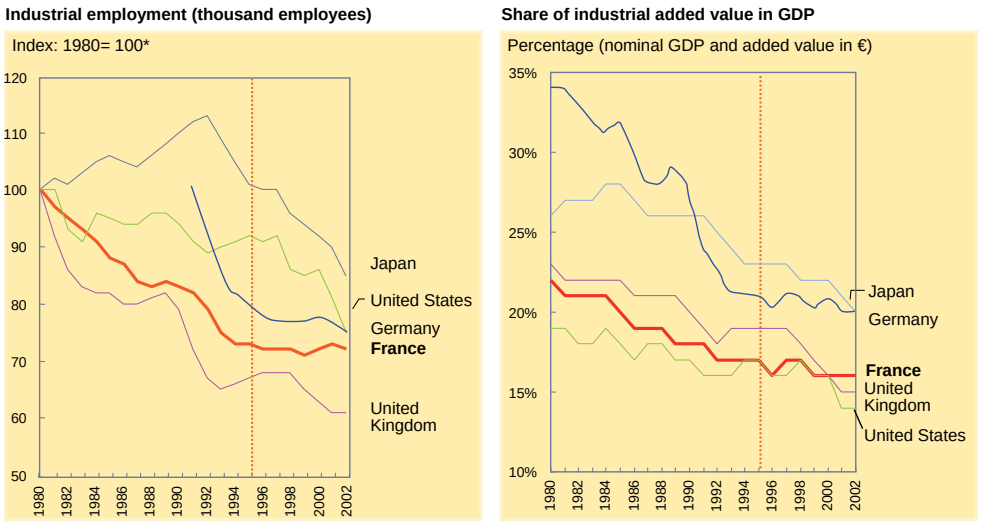
"Since 1995, total industrial employment, including direct jobs and those that have migrated to the services sector, has remained stable."

Although the level of industrial employment has fallen sharply over the past 30 years—with 1.8 million direct jobs disappearing since 1978—the rate of employment erosion has slowed since 1995, since when the loss of direct jobs has been limited to some 300,000. Moreover, the development of secondary industrial services in France appears to have offset this shrinkage in direct industrial employment. For instance, support functions such as maintenance, accounting, and site security have been outsourced into the service sector. Taking this into account, total industrial employment over the past ten years, including direct jobs and those that have migrated to the services sector, has remained stable *(Exhibit 3)*.

The decrease of the share of industry (excluding industry related services) in France's nominal added value and in overall employment also needs to be put in perspective. Industrial added value has grown steadily since 1995 (by an average 1.7% per year in nominal terms and a 2.5 per year in real terms)[6]. This is partly the result of the impact of increasing competition from emerging countries. However, two positive forces have also been at work, both signs of a healthy, developed economy: first, improving productivity gains; and second, the development of services, linked to a rising standard of living.

Exhibit 2: Over the last 25 years, all industrialized countries have seen declines in industrial employment and share of added value

CHANGE IN INDUSTRIAL EMPLOYMENT AND SHARE OF ITS ADDED VALUE IN GDP 1980 - 2002

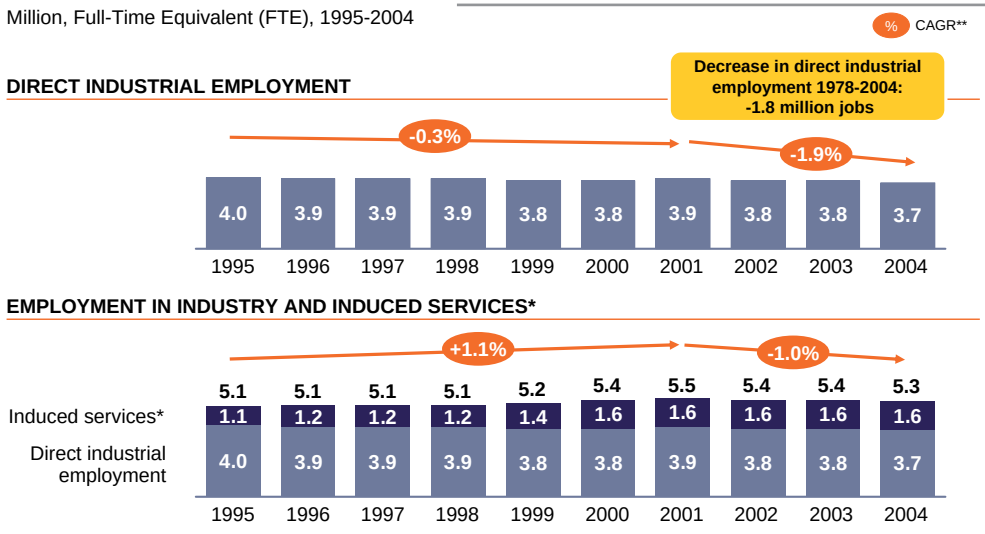


* Except Germany, for which the index is: 1991= 100

Source: OCDE; World Industry Monitor; World Industry Service Navigator by Global Insight; McKinsey analysis

[6] Nominal growth is lower than real growth due to the deflation of industrial prices.

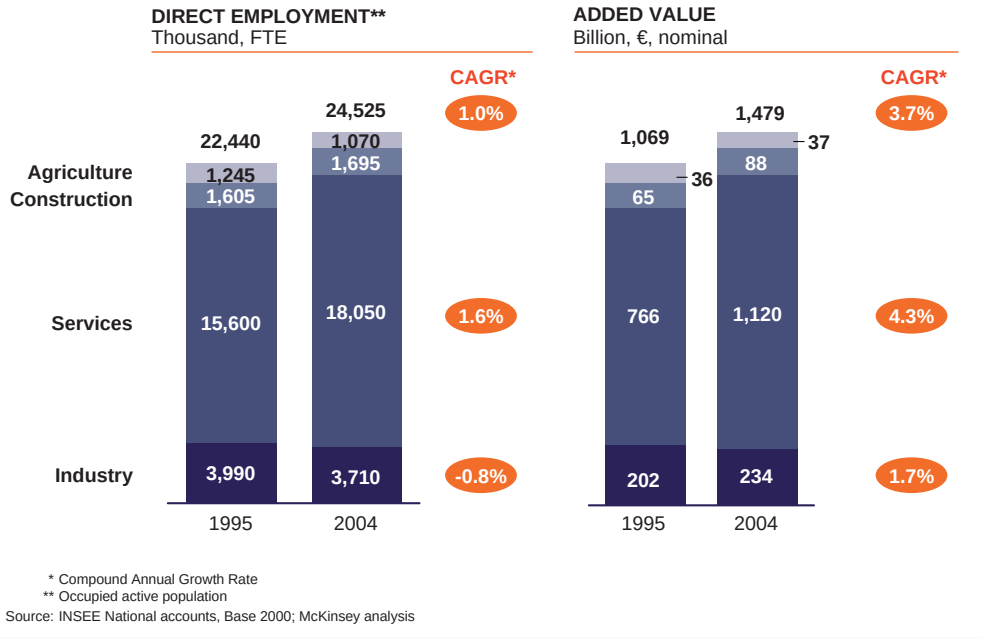
Exhibit 3: Over the last 10 years, erosion of direct industrial employment has been offset by induced industrial service jobs, with an inflexion since 2001



* Taking 40% of employment in "services to company" (estimate of share of these services provided to industrial companies) – interim work included
** Compound annual growth rate
Source: INSEE national accounts, Base 2000; estimate by G. Leblanc in *L'industrie dans l'économie française (1978-2003): Une étude comparée*, 2005; McKinsey analysis

While direct employment in industry has shrunk by some 300,000 jobs since 1995, at the same time industry has seen its nominal added value increase by 1.7 percent. During the same period, the service sector created almost 2.5 million net jobs, with a 4.3 percent annual growth rate in added value *(Exhibit 4)*.

Exhibit 4: This change is explained mainly by rising services



* Compound Annual Growth Rate
** Occupied active population
Source: INSEE National accounts, Base 2000; McKinsey analysis

It is useful to put French industry's decline into perspective; nevertheless, the problems the industry faces should not be underestimated. First, direct, and total, industrial employment has experienced a new downturn since 2001—accounting for almost two-thirds of the jobs lost since 1995. Second, the deterioration in the economic performance and competitiveness of French industry observed over a number of years is arguably much more worrisome than the decline of its relative weight in the overall economy.

1.2 - Disappointing economic performance and a measurable loss of competitiveness

Over the past decade, French industry's economic performance has deteriorated, not only in terms of employment, but also in terms of profits and investment. Indeed, most sectors have experienced a simultaneous decline in all three. Employment declined by some 5 percent on average for industry as a whole between 1995 and 2003; profit margins fell by an average of 12 percent; and investment rates slumped by an average 27 percent between 1996 and 2003 *(Exhibit 5)*. When we analyze French industry beyond the performance of its sectors, it is far from homogenous in terms of industrial companies. At a first sight, it seems that both large and small companies have had similar experiences. SMEs have seen margins cut by 12 percent since 1996 and large companies by 14 percent. SMEs have seen investment levels reduced by 24 percent; large companies by 37 percent. However, France's large companies, with average margins of 9.2 percent, are still faring better than SMES, with average margins of 7.8 percent *(Exhibit 6)*.

French industry as a whole is also experiencing a net slowdown in both nominal and real productivity gains. Although productivity rose by a nominal annual average[7] of 4.2 percent

Exhibit 5: The economic performance of most of France's industrial sectors has declined

COMPARATIVE TRENDS IN EMPLOYMENT, PROFIT MARGINS AND INVESTMENT BY SECTOR
1995-2003, %, nominal value

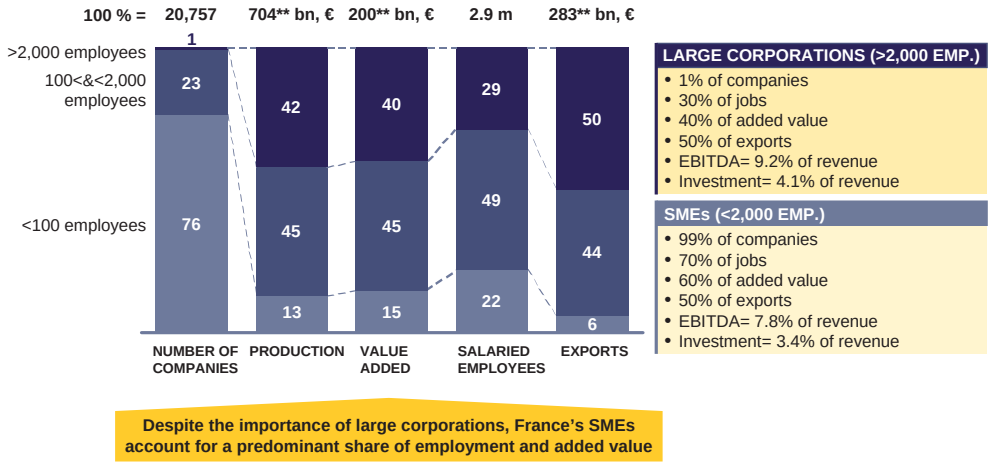
France's industrial sectors	Employment	Margins*	Investment**
Food, beverage and tobacco	10	na	na
Electrical and electronic equipment	9	-15	-33
Chemicals, rubber, plastics	8	-25	-17
Automotive	8	19	-16
Primary and fabricated metals	3	-12	-12
Water, gas, electricity	-3	-22	-48
Electrical and electronic components	-5	-55	-20
Industrial equipment	-6	-6	-22
Transport (inc. aircraft, ships and trains)	-6	47	14
Pharmaceutical, personal care, detergents	-9	-2	-26
Wood and paper	-9	-2	-17
Nonmetallic Mineral products	-10	10	-23
Publishing and printing	-10	-7	-18
Household equipment	-16	-35	-36
Textiles	-26	-11	-34
Apparel and leather	-45	23	-8
Fuel extraction and refining	-47	-68	-43
Total	**-5**	**-12**	**-27**

* Earnings before Interest, Taxes, Depreciation, and Amortization
** Evolution of the investment rate 1996-2003
Source: World Industry Service Navigator by Global Insight, October 2005; McKinsey analysis

[7] Average change in nominal added value per person (full-time equivalent) over the period.

Exhibit 6: SMEs represent roughly 50 percent of exports and 70 percent of industrial jobs in France

BREAKDOWN OF FRANCE'S INDUSTRIAL BASE BY COMPANY SIZE
Companies with more than 20 employees, 2003, %



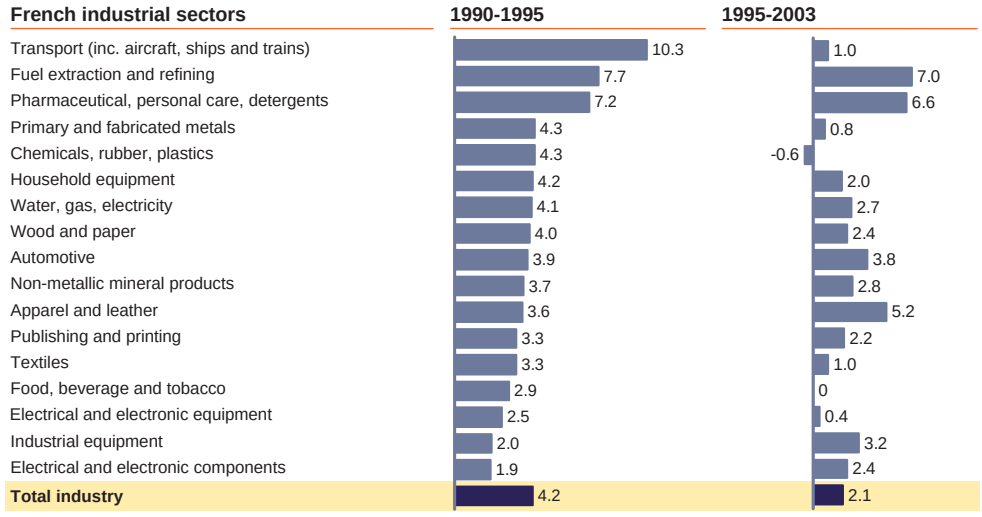
Despite the importance of large corporations, France's SMEs account for a predominant share of employment and added value

* Excluding agro-business
** INSEE data applied to SESSI breakdown
Source: INSEE; SESSI Annual Corporate Survey, 2003

between 1990 and 1995 *(Exhibit 7)*, since that period it has fallen to an annual growth of 2.1 percent[8] which has caused France's productivity growth to fall behind the rate of the USA[9] *(Exhibit 8)*. It is France's slowing productivity growth, rather than its relative

Exhibit7 : The decline in productivity gains has affected most industrial sectors since 1995

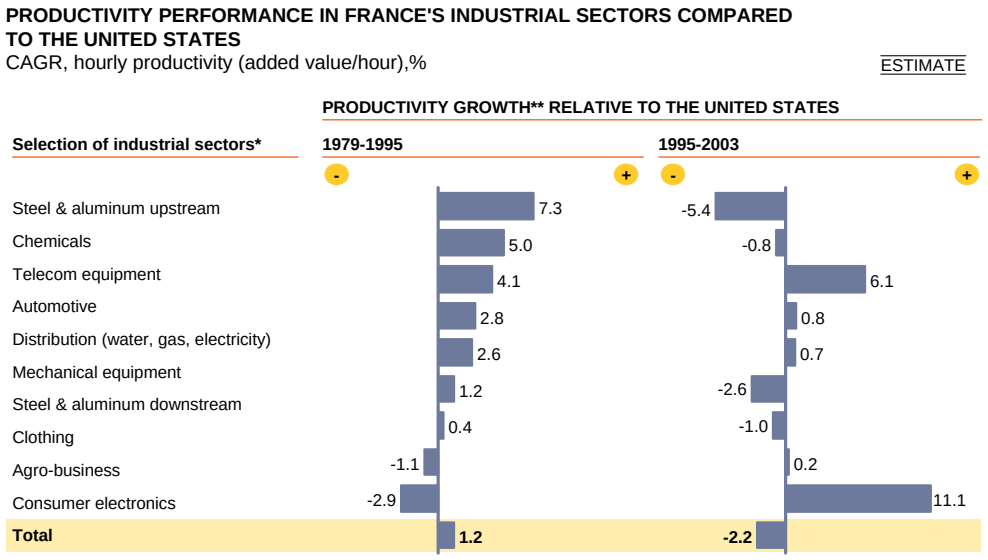
PRODUCTIVITY GROWTH RATES BY SECTOR
CAGR*, nominal added value per person (FTE)



* Compound Annual Growth Rate
Source: National Accounts – Base 2000; INSEE; McKinsey analysis

[8] In real terms, the slowdown is less marked: 4.6 percent between 1990 and 1995 compared with 3.3 percent between 1995 and 2003.
[9] The international-productivity comparisons presented in Exhibit 8 are based on the division of national data (added value, full-time equivalent (FTE) across sectors (ISIC3). The estimates by the Groningen Institute are intended to show trends.

Exhibit 8: France's productivity gap with the United States has widened since 1995



* ISIC category 3
** Difference between the CAGR for hourly productivity in France and the CAGR for hourly productivity in the United States over the same period
Source: Groningen Growth and Development Centre, 60-Industry Database, October 2005, http://www.ggdc.net; Global Insight; McKinsey analysis

position, that is most detrimental because it is productivity *growth* that determines competitiveness between companies, between sectors, and between countries[10].

Despite the fact that France has—so far—maintained its high ranking as the world's fifth largest global exporter of industrial goods, the competitiveness of its industrial base—defined as the capacity to profitably maintain, and gain, market share in foreign and domestic markets—is decreasing *(Exhibit 9)*. Despite the absolute growth of 5.3 percent a year in French exports between 1995 and 2004, French industry's share of global exports of manufactured goods fell from 6.1 percent in 1995 to 5.1 percent in 2004.

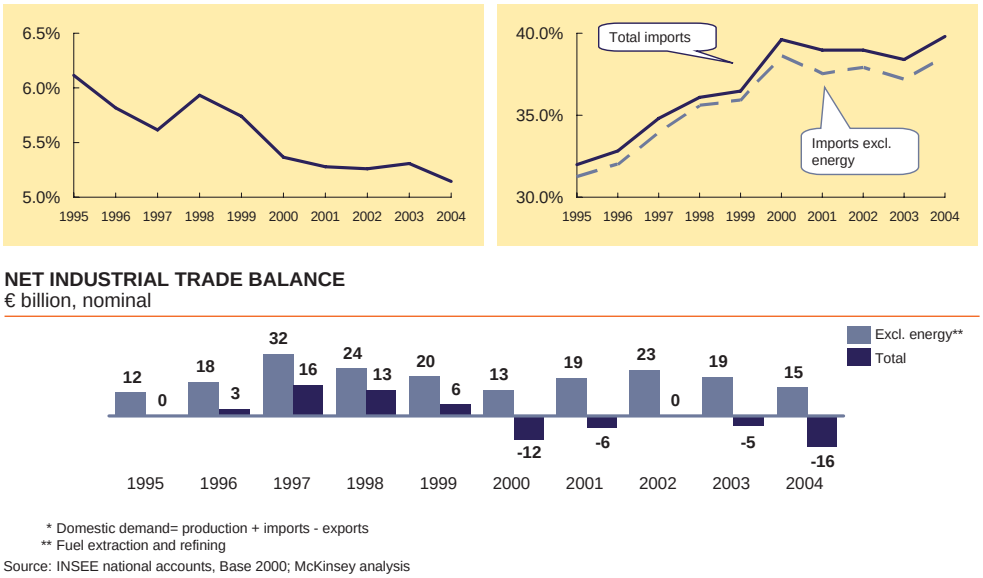
"Despite the fact that France has maintained its high ranking as the world's fifth largest global exporter of industrial goods, the competitiveness of its industrial base is decreasing."

This decrease can be only partly explained by weak positioning in the most dynamic sectors and products or poorly adapted geographic, segment, or technological specialization[11] leading to an insufficient presence on the major export markets—in 2003, for example, the respective market shares of France and Germany were 2.6 percent compared with 6.1 percent in the United States, and 2.2 percent against 8.6 percent in China. The fact is that, even when France is present, its market share has decreased in all industrial sectors and in all major export markets[12].

Furthermore, France's 16 percent loss of market share of global exports over the past decade is double that of the United States and triple that of Germany *(Exhibit 10)*. This suggests that the drop has been driven not only by the growing power of new industrial nations like China, but also by a lack of dynamism in French industry. With exports alone

[10] Michael E. Porter, *What is competitiveness? The competitive advantage of nations, Harvard Business Review*, March-April 1990.
[11] *"L'insertion de l'industrie europeenne dans la Division International du Travail : situation et perspectives,"* CEPII-CIREM report, July 2004 ; Fontagné Lorenzi, *Déindustrialisation, délocalisation*, 2005
[12] Between 1995 and 2004, France lost market share in all industrial sectors and, between 1996 and 2003, in nine out of ten major geographic markets.

Exhibit 9: The trade performance of France's industrial base is eroding

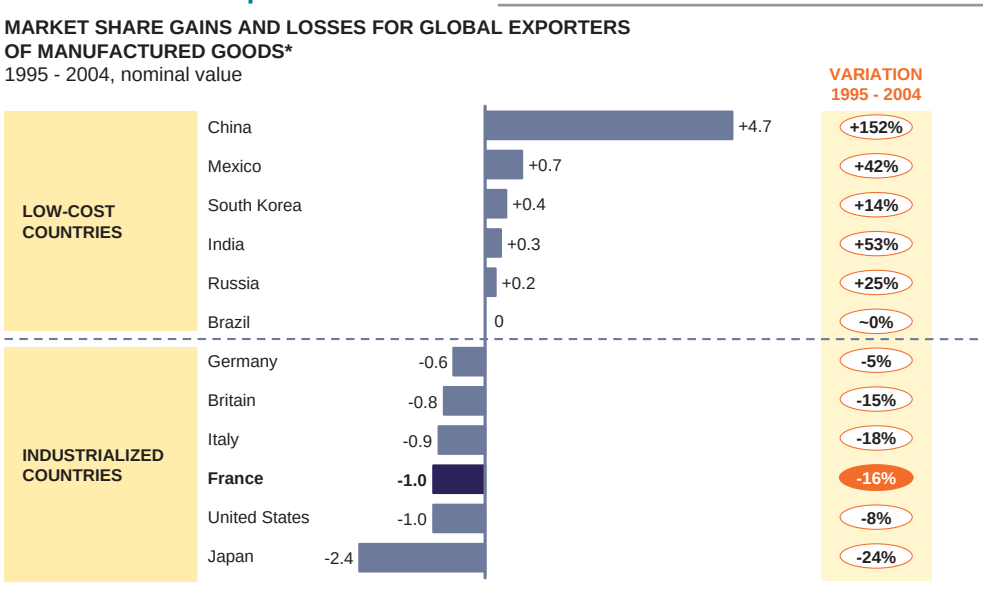


* Domestic demand= production + imports - exports
** Fuel extraction and refining

Source: INSEE national accounts, Base 2000; McKinsey analysis

accounting for two out of every five industrial jobs in France, the underlying root causes of this stagnation demand exploration. A recent report from the Economic Analysis Council[13] points, for instance, to French companies' weak reaction in the face of accelerating growth in export markets and notes the small size and number of exporting SMEs.

Exhibit 10: French industry has registered one of the largest declines in export market share



* Market share 2004 - market share 1995

Source: World Industry Service Navigator by Global Insight, October 2005, McKinsey analysis

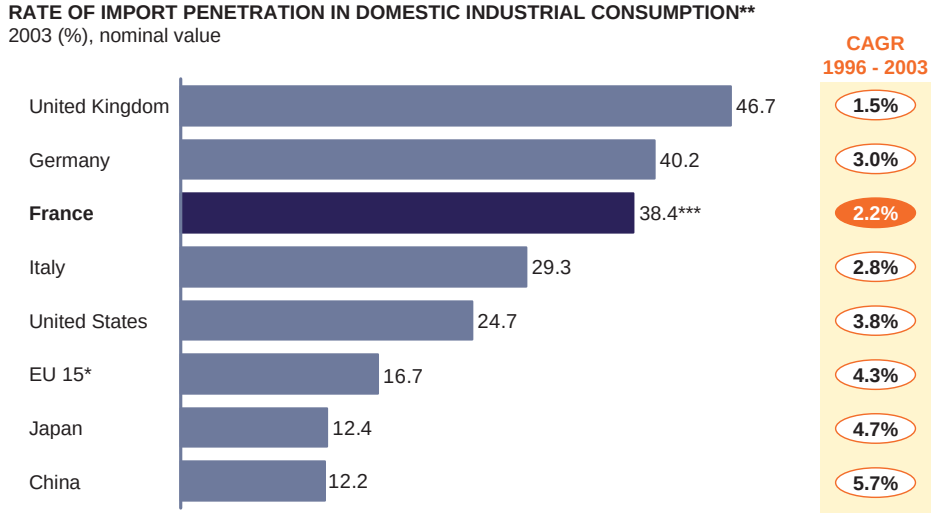
[13] P. Artus and L. Fontagné, "Une analyse de l'évolution récente du Commerce extérieur français, Economic Analysis Council, 2006.

Over the same period, French industry's domestic market share has also deteriorated—the penetration rate of industrial imports increased from 31 percent in 1995 to more than 38 percent in 2003. While this increase is lower than in other industrialized countries, it affects almost every sector, giving France proportionally one of the highest levels of imports among industrialized countries *(Exhibit 11)*. Contrary to widespread belief, the share of French industrial imports from low-cost countries remains relatively low, at only one-third the level of the United States, and less than half that of Germany[14] *(Exhibit 12)*. But what does this observation really mean? Do French products match up to their equivalents from emerging countries? Is France overlooking opportunities that other industrialized countries are exploiting? For example, the United States shows that it is possible to absorb significant imports from low-cost countries but, at the same time, replace its least value-creating industries with other higher added-value activities[15]. Germany is using selective offshoring and imports of semi-finished products to reinforce its export competitiveness. For France, the most important changes in imports and offshoring may well still lie ahead.

1.3 - A high-performing, competitive industry remains key to France's economic health

The decrease in economic performance and loss of competitiveness that we have described poses a real threat, not only to French industry but also, potentially, to the economy as a whole. Globalization primarily heightens competition between companies by increasing the volume of financial and trade exchanges between countries. But it also

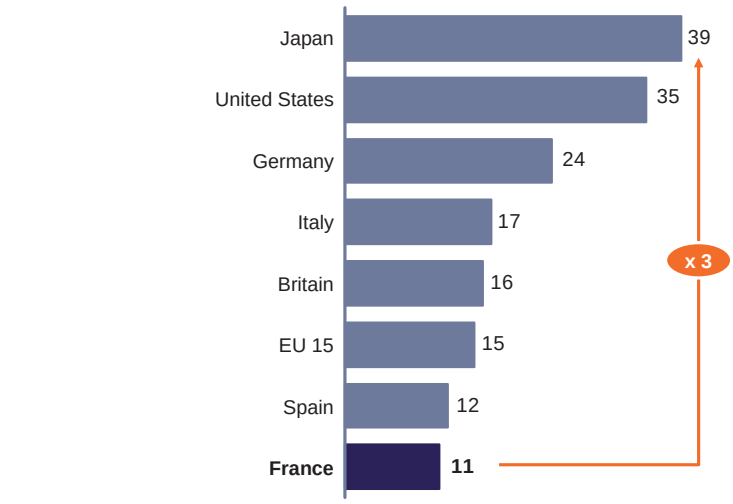
Exhibit 11: France has one of the highest industrial import penetration rates



* Not including trade between EU countries
** As a percentage of domestic consumption= production + imports – exports
*** Excluding energy this rate would be 36.5%
Source: Comtrade; Eurostat; McKinsey analysis

[14] This is an observation that needs to be seen in conjunction with recent estimates on the relatively low impact—for the time being—of offshoring on the industrial employment situation in France. See P. Aubert and P. Sillard, Délocalisations et reductions d'effectifs dans l'industrie française, L'Economie Française, Paris INSEE, 2005.
[15] This transition has some impact on the trade balance, as can be seen in the deterioration of the US current account.

Exhibit 12: The situation could deteriorate even further under the pressure of imports from low-cost countries (LCC)



* Based on a sample: Mexico, Brazil, Tunisia, Morocco, Turkey, Russia, Slovakia, Czech Republic, Rumania, Hungary, Estonia, Taiwan, Singapore, South Korea, Indonesia, India, China

Source: World Industry Service navigator by Global Insight, October 2005, Contrade; Eurostat; McKinsey analysis

instills competition all along the value chain, as companies seek proximity to attractive markets, and restructure in order to locate in those regions and countries where they can capture the best competitive advantages (lower costs, better access to markets and to tangible and intangible assets).

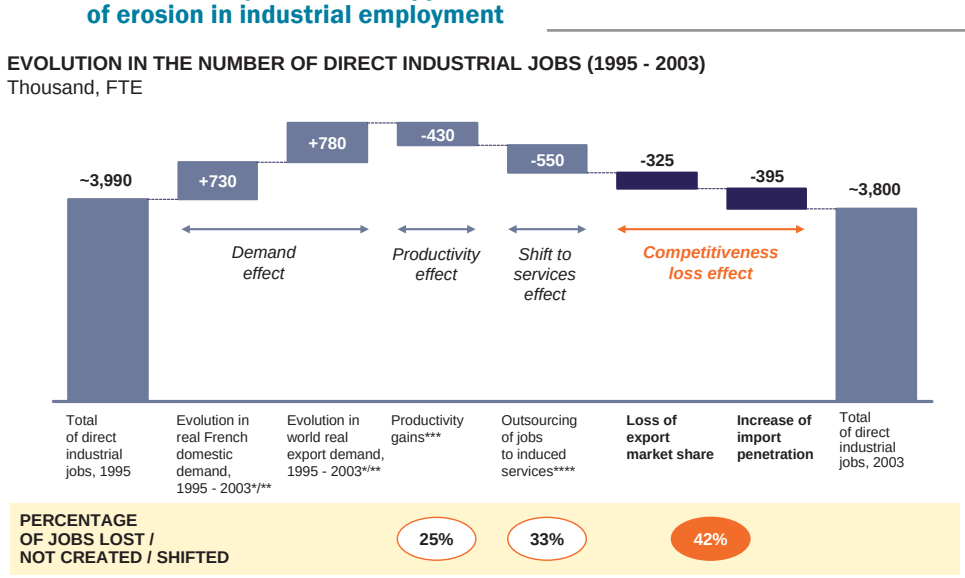
It is in this context of fierce competition across both highly developed and emerging economies that France must endeavor to maximize domestic jobs and added value. It faces three key challenges: attracting high added-value companies, investment, and employment; raising the skills of its active workforce to attain the standard required for new high-added-value jobs; and, finally, preserving job opportunities for unskilled workers.

To win on these fronts, France must maximize the performance of both its service and industrial sectors. While we don't cast doubt on the importance of a strong service sector, we nevertheless argue that developing a high-performing and competitive industrial sector is essential for France for two main reasons:

- First—and most importantly—a strong industrial sector still offers France access to a considerable number of sustainable jobs. We estimate that, if France had been able to maintain its competitive position in both foreign and domestic markets, almost 720,000 jobs could have been preserved, or created, since 1995 *(Exhibit 13)* —a figure that provides an order-of-magnitude idea of what a high-performing and competitive industry sector could contribute to the economy.

"A strong industrial sector would offer France high potential for employment."

Exhibit 13: A loss of competitiveness appears to be the main cause of erosion in industrial employment



* Assuming constant productivity – CAGR estimates: French domestic real growth 3.0% and World export real 6.1%
** Assuming French constant market share on French market (e.g. constant import penetration rate) and on export markets
*** Productivity gains based on adjusted scope after "competitiveness loss" effect
**** 50% of 1995-2003 services to companies' FTE evolution

Source: McKinsey analysis

- Secondly, if the economic performance and competitiveness trends observed in recent years were to continue, there is a real risk that France's industrial base would continue to erode—and even disappear. It remains unclear how far an economy can de-industrialize, either in absolute terms or relative to other sectors, without jeopardizing its overall capacity for economic growth. It is worth noting that even the industrial sectors of a relatively de-industrialized economy such as the United Kingdom, or a "service economy" such as the United States, continue to have a share of GDP (and, to a lesser extent, employment) comparable to that of France.

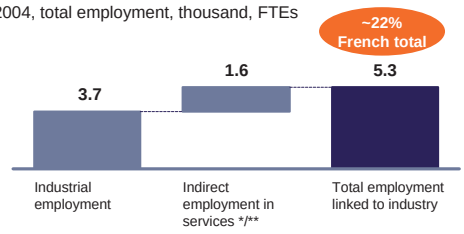
In sum, French industry today is facing a relative decline in its contribution to the economy as a whole, but, more worrying for the country's long-term prosperity, a loss of economic performance and commercial competitiveness. While growing services are a positive development, we believe that the country has no alternative, either in the short- or medium-term, that can compensate for the weakening of its industry. Industry remains an important component of the French economy (including induced services, it currently accounts for nearly 22 percent of jobs and of added value); plays a crucial role in France's balance of trade (it represents €330 billion in exports, compared with €30 billion from tourism and €10 billion from agricultural exports); and makes a key contribution to the creation and diffusion of innovation *(Exhibit 14)*.

If France's industry is to regain its world-class performance level and once again be a pillar of a dynamic French economy, it is essential to understand and resolve the competitiveness and attractiveness issues that currently beleaguer its industrial sector.

Exhibit 14: Industry's contribution in terms of jobs, added value, and exports remains critical

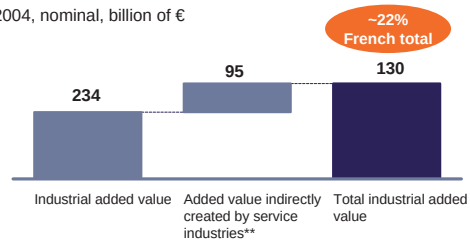
TOTAL EMPLOYMENT RELATED TO INDUSTRY IN FRANCE

2004, total employment, thousand, FTEs



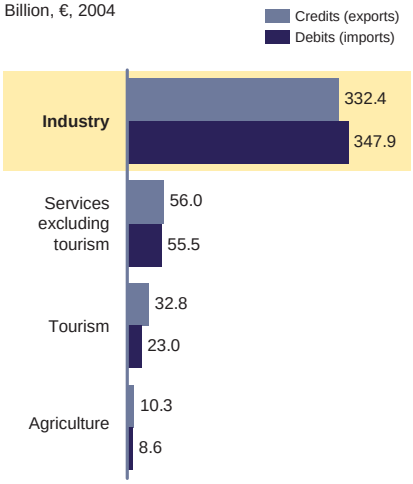
TOTAL ADDED VALUE RELATED TO INDUSTRY IN FRANCE

2004, nominal, billion of €



FRENCH BALANCE OF PAYMENTS

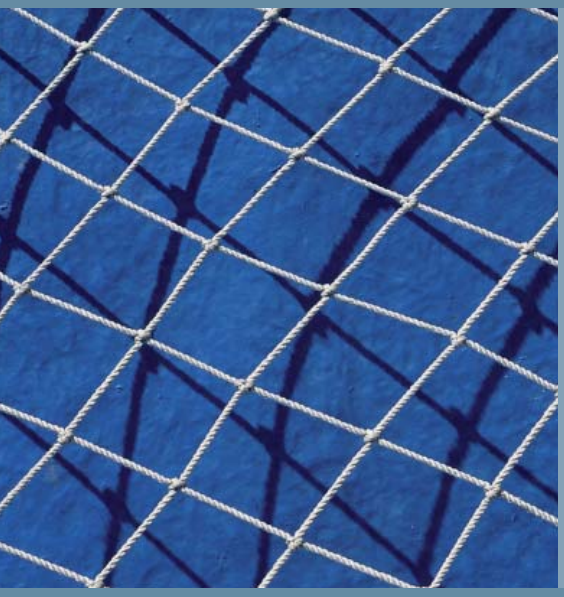
Billion, €, 2004



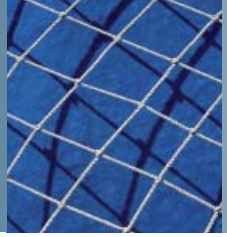
* Employment in businesses supplying services to industrial enterprises: telecommunications, professional advice and services, operational services (e.g. maintenance and cleaning, security)

** It is estimated that between 40 and 50% of all services to companies are supplied to industrial companies

Source: Estimate by Gilles Leblanc in *L'industrie dans l'économie française (1978-2003): Une étude comparée*, April 2005; INSEE national accounts - Base 2000; Banque de France; McKinsey analysis



2 A new framework for analysis and action



2 - A new framework for analysis and action

The challenges of competitiveness and the threats and opportunities that come with globalization differ from one industrial sector to another. We analyzed more than 250 sectors recognized by the INSEE, with the goal of developing a framework which organizes France's diverse industrial landscape into smaller groups that share competitive attributes, and therefore potential solutions to their problems.

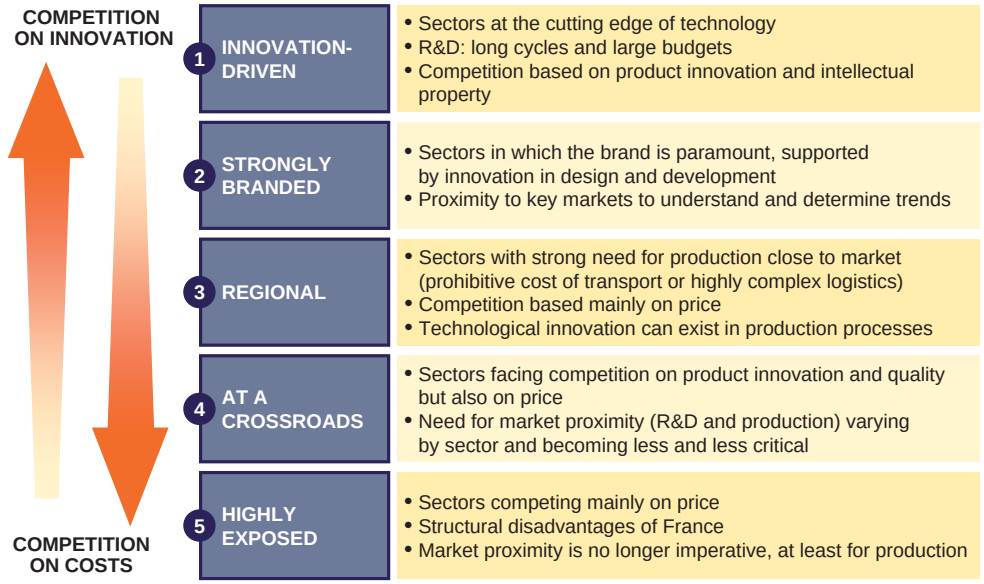
2.1 - Five sector groups encompass the range of industrial competitiveness issues

We examined France's industrial sectors according to five criteria of competitiveness:

- **Nature of the competition**—is it based on innovation and the attractiveness of products, or on price?
- **French comparative advantage**—is there a significant difference in cost between imported goods and those produced in France? Are the tangible and intangible assets of companies based in France superior or inferior to those of their overseas competitors?
- **Need for proximity to market**—is it important for products to be designed and manufactured close to their markets? Do the design, manufacturing, distribution, and sales functions need to be geographically close to each other? Are shipping costs and delivery lead-times critical?
- **Spillover effect**—does the sector create a dynamic likely to benefit activity in other sectors (spreading innovation, induced employment, etc.)?
- **Entry and exit barriers**—are the inherent costs and risks for a company trying to break into—or disengage from—the sector substantial, or even prohibitive?

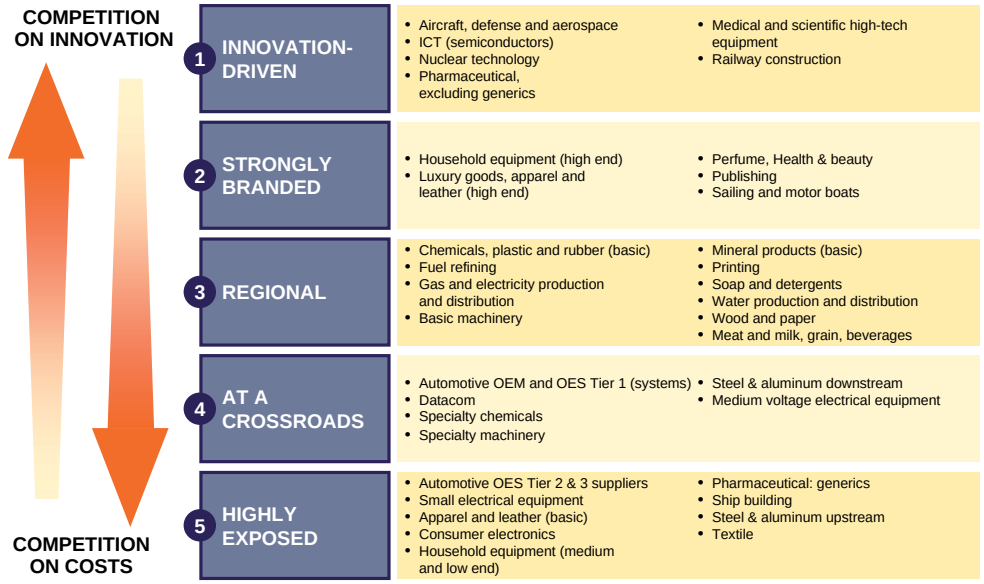
"We identified five groups of sectors with distinct and differentiated characteristics of both competitiveness and attractiveness."

Exhibit 15: Five groups of industrial sectors, with specific competitiveness challenges



Source: McKinsey

Exhibit 16: Examples of industrial sectors for each group



Source: McKinsey

By measuring the incidence of each criterion on the entire spectrum of industrial activities operating on French territory, we classified the more than 250 industrial sectors resulting in five groups of sectors with distinct and differentiated characteristics of both competitiveness and attractiveness[16] *(Exhibits 15 and 16)*.

1. **Innovation-driven:** sectors relying heavily on technology that have long and costly research and development cycles; in which competition is centered heavily on innovation; and where a handful of leading companies exert a powerful spillover effect on subcontractors or related sectors. *Examples—aircraft and train manufacturing, semiconductors, nuclear energy equipment*.

2. **Strongly branded:** sectors where brand image—sustained through continuous innovation in design and conception—is essential; and where in-depth understanding of consumer expectations and speed of responsiveness to market developments or the ability to shape them are critical. *Examples—luxury goods, cosmetics*.

3. **Regional:** sectors characterized by a strong need for proximity to market, because of difficult or costly transportation. *Examples—basic chemicals, electricity generation and distribution*.

4. **At a crossroads:** sectors characterized by competition on product quality and innovation as well as strong pressure on prices; and facing growing competitive threat from emerging countries. *Examples—automotive, telecommunications equipment*.

5. **Highly exposed:** sectors where competition hinges mainly on price and where the cost of transporting products is not a barrier; in which the relative importance of labor costs in products gives emerging countries a decisive advantage. *Examples—apparel, electrical consumer goods, small home appliances*.

[16] See Annex 1 for the methodology and the detailed list of sectors included in each group.

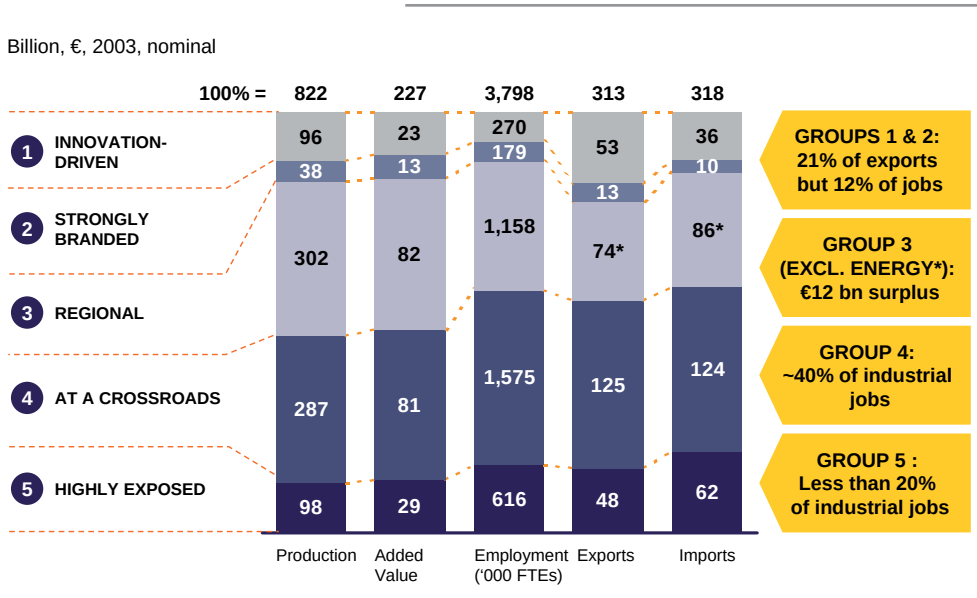
2.2 - Relative weight and performance of the five sector groups

Analysis of the relative sizes of the different sector groups reveals several promising areas—and challenges *(Exhibit 17)*. Most promising are the groups centered on innovation-based competition—"innovation-driven" sectors (where R&D is critical) and "strongly branded" sectors (where marketing innovation is essential)—that account for 21 percent of French exports, but only 12 percent of jobs. This low employment figure, combined with significant global-growth potential, suggests scope for increased employment in these two groups. At the other end of the spectrum, the "highly exposed" group of companies represents nearly 20 percent of industry jobs. Given the competitive pressure under which they operate, this does not presage a bright future, although we should note that excessive concern isn't warranted given that this 20 percent accounts for only 3 percent of total employment in France. Between these two poles, the "regional" sectors and "at a crossroads" sectors, with a combined share of 70 percent of jobs and of added value, lie at the heart of the French industrial landscape, and most of the major competitiveness issues therefore revolve around them. The future of our industrial base largely depends on their capacity to meet the challenge of globalization.

"Detailed competitiveness analysis reveals that all the groups struggle to maintain their positions in foreign and domestic markets."

Our analysis shows that French industry is not structurally different from its US and German counterparts *(Exhibit 18)*. France and the United States have comparable shares of "innovation-driven" and "strongly branded" sectors; Germany's share of these groupings is somewhat lower. The three countries also have similar proportions of added value and jobs in their "highly exposed" sectors. The main difference lies in the relative specialization

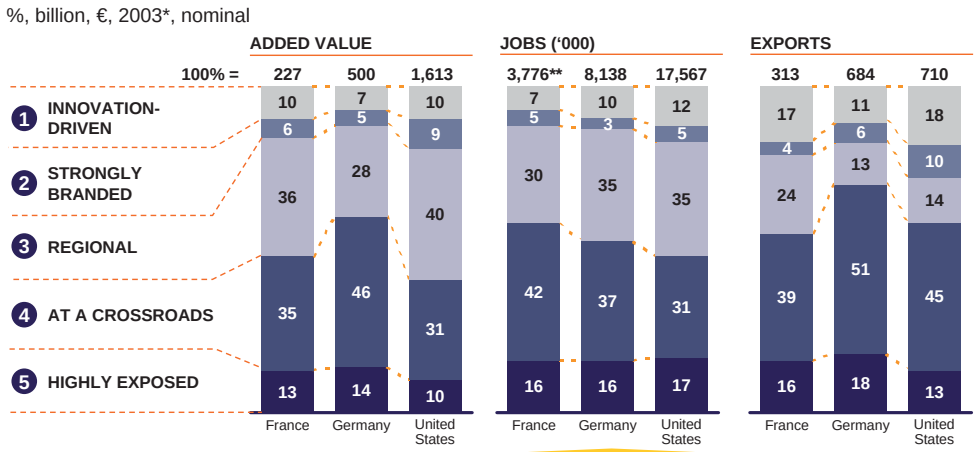
Exhibit 17: Almost 20 percent of industrial jobs face a significant threat



* Energy (fuel extraction and refining): 8 billion in exports and 32 billion in imports

Source: SESSI, INSEE data; McKinsey

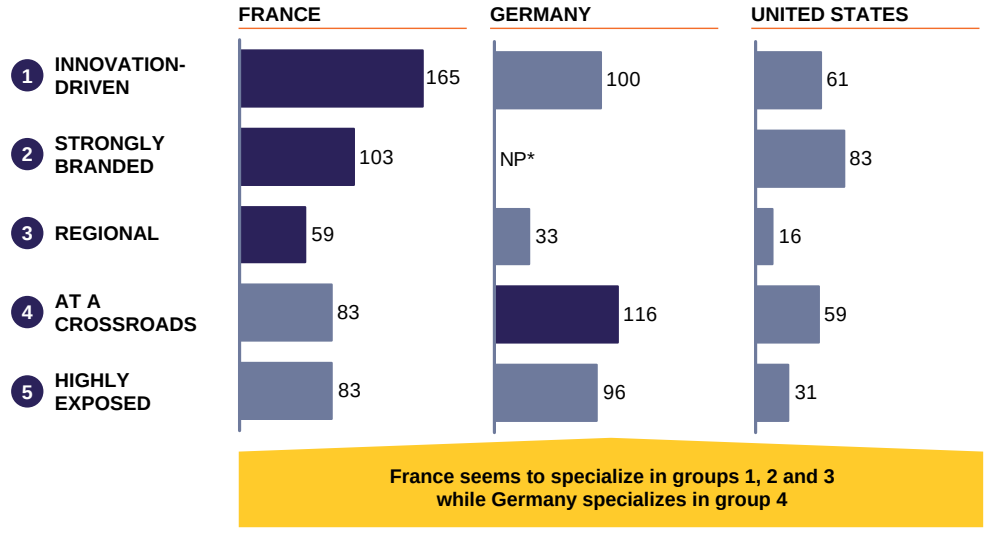
Exhibit 18: France's industrial structure is similar to that of the United States and Germany



* 2004 for Germany and the United States
** Distribution based on the number of FTEs (see Exhibit 17)
*** Absolute figures should be related to the percentage of the labor force
Source: Global Insight; McKinsey

of exports—Germany is particularly active in the "at a crossroads" sectors, while France is predominantly engaged in the "innovation-driven", "strongly branded", and "regional" sectors *(Exhibit 19)*.

Exhibit 19: France and Germany specialize their exports on different sector groups



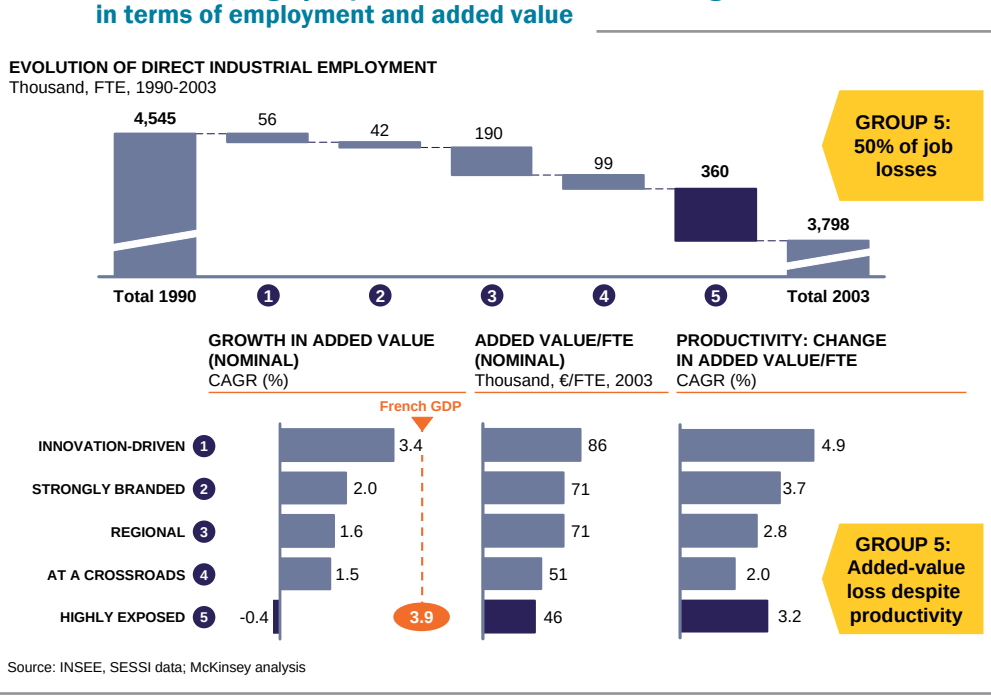
* Data not pertinent
Source: Global Insight; McKinsey

Several trends in the economic performance of these five groups over time emerge from an analysis of data from 1990 to 2003[17] *(Exhibit 20)*. First, the "highly exposed" group has been most affected, with a loss of 360,000 jobs—half of the loss for the entire French industry over that period—and was the only group whose nominal added value stagnated (and, in some cases, declined). Second, the "innovation-driven" and "strongly branded" sectors stood out by virtue of their relatively strong performances—suffering limited job losses and reporting satisfactory rates of growth in nominal added value, along with substantial gains in productivity (4.9 percent and 3.7 percent annually respectively). However, all sectors experienced an inflection point in 2000, with a marked slowdown in added-value growth and productivity gains since that time *(Exhibit 21)*.

Between 1990 and 2003, despite an improvement in the trade balance in four out of the five groups (the exception being the "highly exposed" group), a more detailed analysis reveals that all struggled to maintain their positions in foreign and domestic markets, regardless of the euro/dollar exchange rate *(Exhibit 22)*. The "highly exposed" companies saw their import penetration rise from 40 percent to 55 percent during this period. The "at a crossroads" group experienced a decline in its export-market share from 6.9 percent to 5.2 percent. The "regional" sectors saw import penetration rise from 23 percent to 27 percent, and their export-market share decrease from 6.4 percent to 4.2 percent.

Most surprisingly, perhaps, even "innovation-driven" companies saw their export-market share fall from 7.7 percent in 1995 to

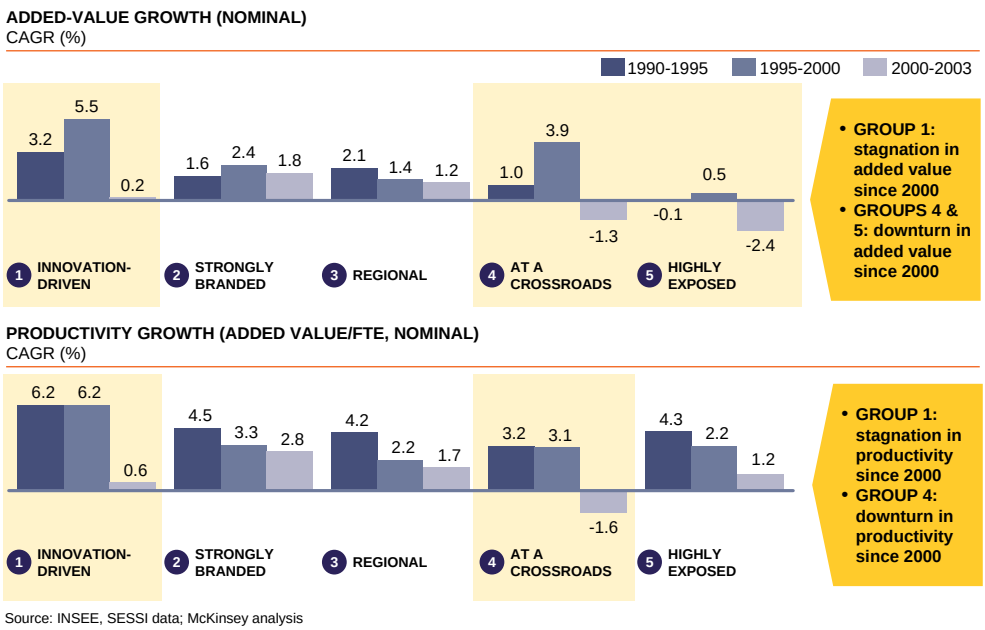
Exhibit 20: Since 1990, highly exposed sectors have been falling behind in terms of employment and added value



Source: INSEE, SESSI data; McKinsey analysis

[17] See note on segmentation methodology.

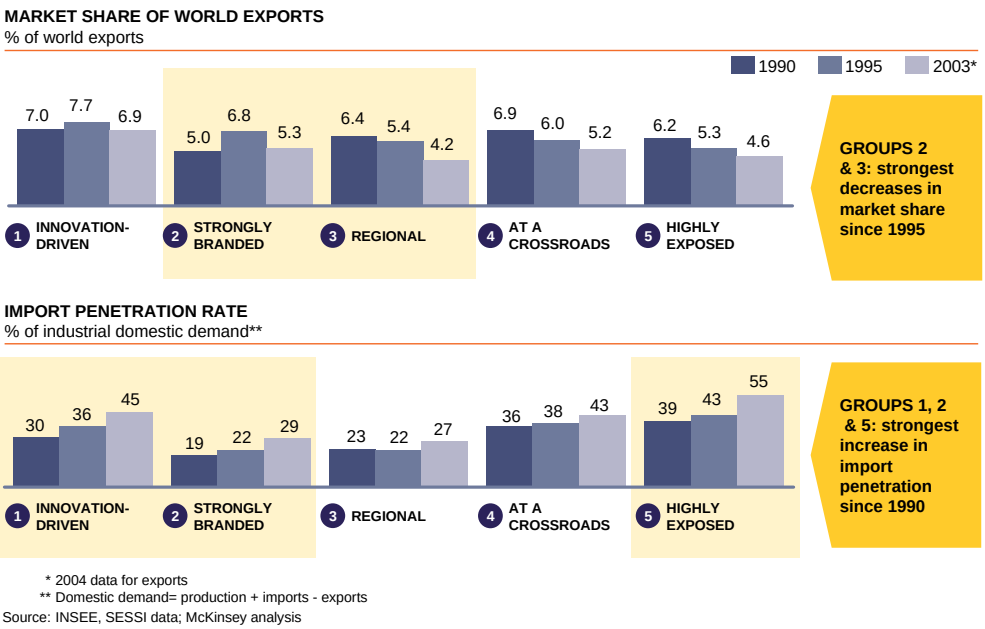
Exhibit 21: Added value for all groups has been slowing down since 2000, with productivity growth falling sharply



Source: INSEE, SESSI data; McKinsey analysis

6.9 percent; the "strongly branded" group similarly saw its export-market share fall by 2.5 points over the same period. So, while it is true that declining economic performance and competitiveness has been more marked for some groups than for others, the reality is that these difficulties affect the whole of French industry.

Exhibit 22: The competitiveness of all groups has been eroding since 1995



* 2004 data for exports
** Domestic demand= production + imports - exports
Source: INSEE, SESSI data; McKinsey analysis

In order to illustrate the competitiveness and attractiveness issues that companies and sectors in these groups face, we analyzed one or two representative sectors from each group *(see Box 1)* .

This allowed us to identify priorities for each group; as well as the action that needs to be taken across groups, which we further describe in Chapter 3.

Box 1: Sectors selected for detailed analysis

1. **Innovation-driven:**
   civil aviation industry, aerospace, and defense
2. **Strongly branded:**
   luxury goods
3. **Regional:**
   basic chemicals (excluding specialty chemicals)
4. **At a crossroads:**
   automotive (carmakers and first-tier systems suppliers); telecommunications equipment
5. **Highly exposed:**
   apparel

2.3 - Specific competitiveness challenges and priorities

The sector analyses we undertook in each of the five sector groups allowed us to better understand the challenges that each faces and to highlight specific priorities which deserve examination in each.

"It is clear that the five sector groups vary widely, both in the level of their competitiveness and in the nature of the challenges they face."

France's **"innovation-driven" sectors** undeniably have considerable strengths, but they still need to work to meet four requirements:

- *Develop cutting-edge global players*—creating or strengthening existing global players, essentially by regrouping existing French or European companies (leading manufacturers and equipment suppliers); achieving the critical mass necessary to remain consistently at the leading edge of innovation; diffusing innovations with the greatest economies of scale, to attract talent;
- *Encourage the development of a consolidated European demand* to create ambitious, global-scale projects, notably in the defense sector;
- *Streamline operations to* reduce product-development cycles and improve product-introduction lead-times, thus maintaining leadership in innovation;
- *Build a global operations base in R&D, manufacturing, and services*—managing transfers of technology, R&D, and manufacturing capacity in order to gain a foothold in high-growth emerging markets such as China; taking advantage of the potential these markets offer, while concentrating domestic activities on areas of excellence.

Players in **"strongly branded" sectors** face four major priorities:

- *Invest in innovation and creativity*—encouraging the creative process, with the aim of restoring France to a position of, some would say, the world's trend-setter;
- *Exploit and develop brands*—leveraging national "know-how";
- *Optimize operational efficiency*—reinforcing the performance imperative in all areas of activity;
- *Develop export markets and tourism assets*—exploiting economies of scale and scope (particularly in retail) to win in the global market and extract maximum value from France's natural and cultural heritage.

Despite enjoying relative protection from more distant competitors, France's **"regional" sectors** are not insulated. Moreover, they are very often upstream industries such as power or basic material production, their level of competitiveness has a strong impact on those downstream industries that use their output. Despite a trade surplus (excluding energy), they face a number of pressures that explain their declining competitive performance and the loss of 200,000 jobs since 1990. Players in these sectors need to maintain robust cost-competitiveness in serving French and European markets, at the same time as generating sufficient profits to finance expansion into potentially lucrative international markets, notably in emerging economies. To achieve this, they must:

- *Optimize economies of scale*—building players who are leaders in their segment (at least at a European level), and concentrating French-based production in a few centers with global scale and efficiency;
- *Implement ambitious operational improvement programs;*
- *Reinvent themselves to capture growth potential*—investing in innovation and new products (e.g. green chemistry, biofuels), in order to develop new opportunities for future growth; strengthening their ability to attract talent; and investing in geographic growth areas;
- *Manage competitive, regulatory, and social developments*—for current monopolies, anticipating markets opening up, stronger demand for greater efficiency, and possible future cross-border consolidations; for all players, taking into account recent public opinion and regulation with respect to sustainable development (monitoring, communication, and advances in technology).

While the **"at a crossroads" sectors** also possess considerable strengths and potential, the future success of companies in this group, accounting for 1.5 million jobs in France, depends on tackling three imperatives:

- *Innovate on all dimensions*—improving product, process, and economic models, all while keeping costs under control;
- *Build a global operational base in R&D, manufacturing, and services*—harnessing competitive skills and local "know-how" and securing proximity to markets and end-customers;
- *Improve the cost base and responsiveness*—implementing operational improvement programs in product development, as well as manufacturing and logistics, in order to respond to fast-moving competitors from low-cost countries.

Finally, despite the weak performance of companies in **"highly exposed" sectors**, there are opportunities for those that are capable of smart positioning and true operational excellence. Nevertheless, this group, which still represents almost 20 percent of direct industrial employment in France, faces stiff challenges. For companies in these sectors, it will be necessary to:

- *Target profitable niches and master their success factors*—concentrating on activities (whether products or steps in the value chain) in which they still have the potential to succeed;
- *Concentrate on R&D, marketing, and distribution;*
- *Share or outsource non-critical activities both farshore and nearshore.*

Public authorities can play a role in supporting sector transformation by, for instance, facilitating worker redeployment. Measures that are worth considering include making it easier to file bankruptcy or to divest unprofitable business units, and encouraging mass retraining programs so that talent can be transferred to more buoyant or less-exposed sectors, whether they are in industry or services.

It is clear that these five sector groups vary widely, both in the level of their competitiveness and in the nature of the challenges they face. However, it is also evident that the time has come for urgent action to strengthen France's industrial base's performance. Implementing the priorities listed for each of the five groups is the first step in this exercise.


N

3 Six courses of action to reinvigorate France's industrial base

3 - Six courses of action to reinvigorate France's industrial base

In addition to the priorities we have specified for each group, we identified six courses of cross-industry actions which apply to all sectors and aim to revive the dynamism of France's industrial activities. Before describing these in detail, however, it is important to clarify two points:

- First, French companies are not homogeneous—their performance and the issues they face vary not only from sector to sector, but also according to company size. So, actions to improve the industrial base must be adapted to the needs of large corporations as well as SMEs.

- Second, while the burden of improving France's industrial base mainly rest on companies' shoulders, public authorities also have an important role to play, using four main levers: regulation, public R&D funding, public-sector markets, and the education system. That said, business and government do not necessarily share the same objectives. Companies legitimately seek to maximize their profits and their shareholders' interests—by increasing sales, lowering costs, and optimizing geographic location to access skills and resources. Public authorities, on the other hand, aim—just as legitimately—to maximize job creation and economic growth in order to foster the healthy long-term development of society. Even if France is able to revive a high-performing industrial base while satisfying both sets of objectives, determining the most effective recommendations and implementing them must take into account potential tensions between the two players.

Hereafter, we detail the six cross-sectoral courses of action we have identified *(see Box 2)*.

- The first two are macroeconomic in nature, and fall within the government's purview. They are not new; indeed, the McKinsey Global Institute has alluded to them in several documents published since 1997 on the French and European economies[18]. While many of the elements of these macroeconomic policy paths have become the subject of public debate, they have only partly been implemented and merit repeating.

- The next two courses of action lie in the corporate domain, although government should play an active supporting role.

- The last two require close cooperation between the private and public players.

[18] See *Removing Barriers to Growth and Employment in France and Germany*, MGI, March 1997; *Reaching higher productivity growth in France and Germany*, MGI, October 2002; *Improving European competitiveness*, MGI Perspective, July 2003; *A Roadmap for European Economic Reform*, MGI, 2005; *How offshoring of services could benefit France*, MGI 2005.

Box 2: Cross-sectoral courses of action

Macroeconomic courses of action, for government:

1. Adopting "smart" regulation and optimizing the level of competition in each sector;
2. Improving labor-market fuidity and developing the workforce employability.

Actions to be pursued by the private sector, with government support:

3. Launching a "Lean Initiative" to make a quantum leap in productivity;
4. Capitalizing on the proximity of French companies to the European market.

Joint public-private courses of action:

5. Focusing resources and efforts to favor high-potential sectors and areas of excellence;
6. Stimulating, decompartmentalizing, and spreading innovation.

3.1 - Adopting "smart" regulation and optimizing the level of competition in each sector

Regulating the market without stifling it is a delicate balancing act—an over-regulated market prevents the development of competition (by favoring the emergence of monopolies or oligopolies that thrive on guaranteed income streams), but an under-regulated market can be harmful in the long-term by fragmenting the market thus curbing company development.

Legislators need to adapt by introducing "smart" regulations, i.e. ensuring consumer protection, at the same time offering optimal competition between economic players in order to stimulate the innovation that drives growth. Just as the balance between these elements varies from sector to sector and develops over time, so the regulation should itself evolve. For example, the European Commission's policy on competition could be revised, notably its definition of "relevant market" in the case of mergers, so that competitive global-scale European champions are allowed to emerge. One might also consider drawing new lines of distinction between competition and the exploitation of guaranteed-income streams (like those offered by intellectual property protection), or between the protection of the public interest (for example, protection of the environment beyond the Kyoto protocol or the REACH directive) and the competitiveness of French and European companies.

Government implementation of appropriate "smart" regulations can be a powerful economic lever. For example, harmonizing technical standards leads to the creation of wider and more dynamic markets. Moreover, consolidating public invitations to tender across Europe and allowing Europe-wide competition should lead to the concentration of players and economies of scale. Likewise, gradual exposure to international competition, through the progressive lowering of taxes and import quotas, leads to greater dynamism and enhanced performance among national players.

"Encourage regulations that ensure consumer protection, at the same time offering optimal competition between economic players in order to stimulate the innovation that drives growth."

3.2 - Improving labor-market fluidity and developing workforce employability

"Improve the transition between today's industrial jobs and the professional activities of the future, whether in industry or services."

One of the main challenges industry faces is how to improve the transition between today's industrial jobs and the professional activities of the future, whether in industry or services. Smoothing this transition calls for a dual effort by government to improve labor-market fluidity and develop employability—initiatives which, when conducted in parallel, are mutually reinforcing.

Improving labor-market fluidity

This undertaking calls first for modernizing the regulatory framework governing employment, notably by making it easier to hire personnel, by simplifying collective redundancy procedures, and by finding cost-efficient ways to make working hours flexible; second, improving incentives for individuals to return to work through root-and-branch reform of the employment-insurance and jobseeker-support systems (ANPE).

Developing workforce employability

Achieving this objective demands efforts on several fronts. First, the educational system needs to be adapted to meet future changes in the labor market (vocational counseling; upstream detection of needs in highly-qualified personnel; eliminating obsolete career paths). Second, employees' potential for re-training needs to be improved. This latter point calls for a far more ambitious employee-training project than the current "right to education" program. It most likely requires radical reform of continuing education, including a substantial increase in the amount of training time guaranteed for each employee; a complete overhaul of the financing and the choice of training programs in order to maximize employability in the short- (one to two years), medium- (three to five years), and long-term (more than five years); and in-depth reform of the institutions that deliver the courses and certify the skills acquired by trainees. Third, the employment rate among the less skilled needs to improve, and this could imply decoupling the cost of work (minimum wage) from buying power.

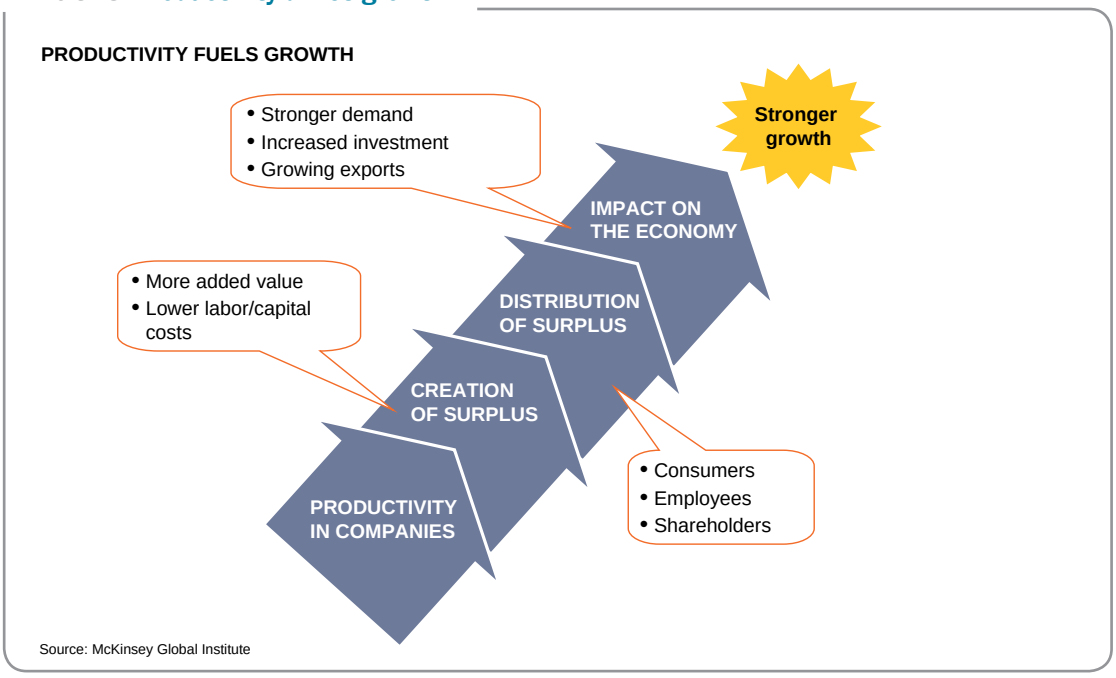
3.3 - Launching a "Lean Initiative" to make a quantum leap in productivity

Improving productivity levels drives economic growth. Productivity gains generate an "economic surplus" which can, in turn, be re-invested, paid as salaries, or distributed to consumers (in the form of lower prices), or to shareholders *(Exhibit 23)*. Our sector analyses, particularly of the automotive sector in the "at a crossroads" group, indicate that France's industrial companies still have considerable potential for productivity gains *(Exhibit 24)*.

The idea of a "Lean Initiative" for French industry arises from a two-fold observation *(see Box 3)*. In many industrial sectors, the growing cost gap between French companies and their European, US, Japanese, and Chinese competitors represent a threat in the long run for France's industrial base (a study conducted by McKinsey of the European automotive sector with a 2015 horizon, revealed, for example, that without any significant increases in productivity, certain vehicles produced in China could, within ten years, be more competitive than those produced in France). Yet, an ambitious operational efficiency improvement program can, in many cases, bridge this often overestimated cost differential. A 2005 study by McKinsey in California illustrated the risks of industrial offshoring in several representative sectors *(see Box 4 and Exhibit 25)*.

"It is preferable, at least in the short- to medium-term to optimize existing industrial sites rather than rebuild elsewhere."

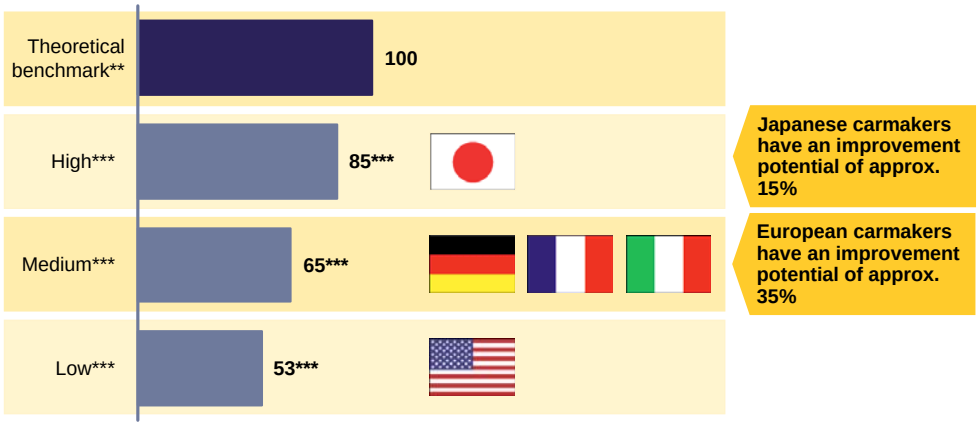
Exhibit 23: Productivity drives growth



Source: McKinsey Global Institute

Exhibit 24: Industry still has significant productivity potential —automotive sector example

COMPARATIVE GLOBAL PRODUCTIVITY PERFORMANCE* OF CARMAKERS
Global performance index* 100= benchmark**, 2004



* Global Performance Index: capital productivity^(1 - α) x labor productivity^(α); α= 0.8 (proportion of labor as a production factor)
** Theoretical benchmark: (best labor productivity/best labor cost) x (best overall capital productivity)
*** Average value for the category
Source: McKinsey

Box 3: The Lean approach

Lean manufacturing is a method originally developed by the automotive manufacturer Toyota, aimed at continuous improvement not only in costs but also in inventory, product, and process quality, and manufacturing lead-times between order and delivery.

This approach can be applied equally well to manufacturing, R&D, logistics, and support functions. Not only does it encompass techniques and tools for eliminating waste and variability and for improving the flexibility of tools and working methods, it also proposes a radically different organization of processes, encouraging operators and managerial staff to take the initiative and drive continuous improvement.

Originally developed for the automotive industry, Lean principles have been adopted, developed, and adapted for application across a range of activities (from design to distribution), and industries (assembly and continuous manufacturing processes), as well as in services (bank back-offices, telecommunications-network maintenance, call centers, etc.).

Box 4: The California example

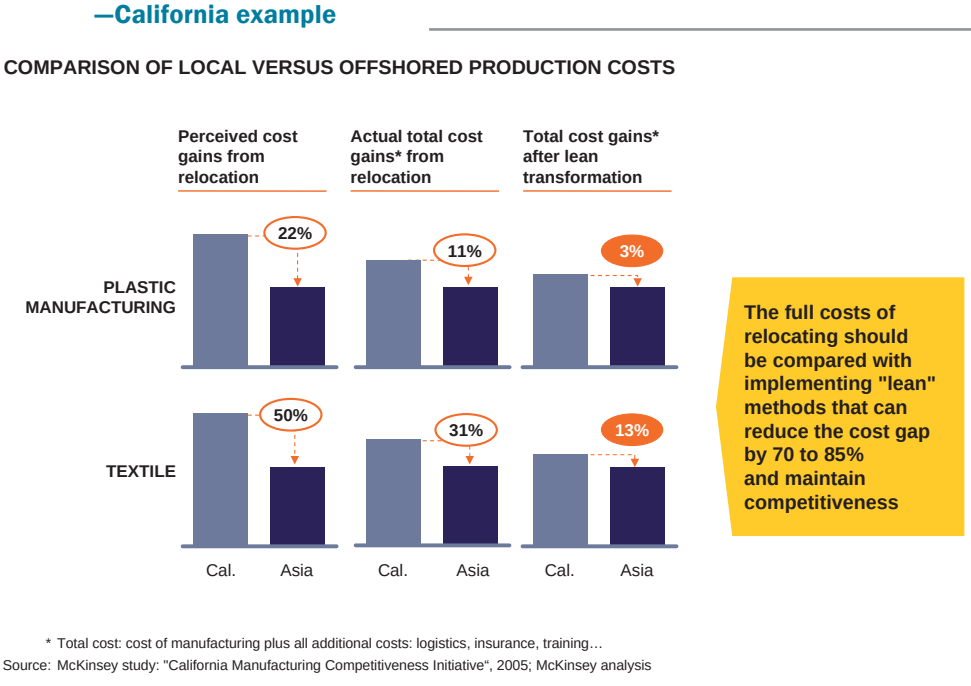
A 2005 study conducted by McKinsey in California on the risks of industrial relocation for a representative cross-section of industrial sectors revealed that California's industrial base faces competitiveness problems analogous to those facing that of France.

The study highlights a large gap, as perceived by senior company management, in the current of products made in California compared with Asian imports (from 22 percent in plastics to 50 percent in apparel *(Exhibit 25)*. Such differentials serve to show just how appealing the relocation option can appear to businesses.

And yet, once all the real costs of remote production (logistics, insurance, foreign-exchange risks, intellectual-property risks, team training, plant ramp-up, changes in the availability and cost of labor etc.) are taken into account as well as the actual performance improvements that can be captured in existing sites, the cost differentials are reduced significantly.

A more rigorous assessment of the costs of relocation, combined with the implementation of Lean methods in California's industrial base, can narrow the gap by between 70 percent and 85 percent, depending on the sector.

Exhibit 25: The cost barrier is not insurmountable —California example

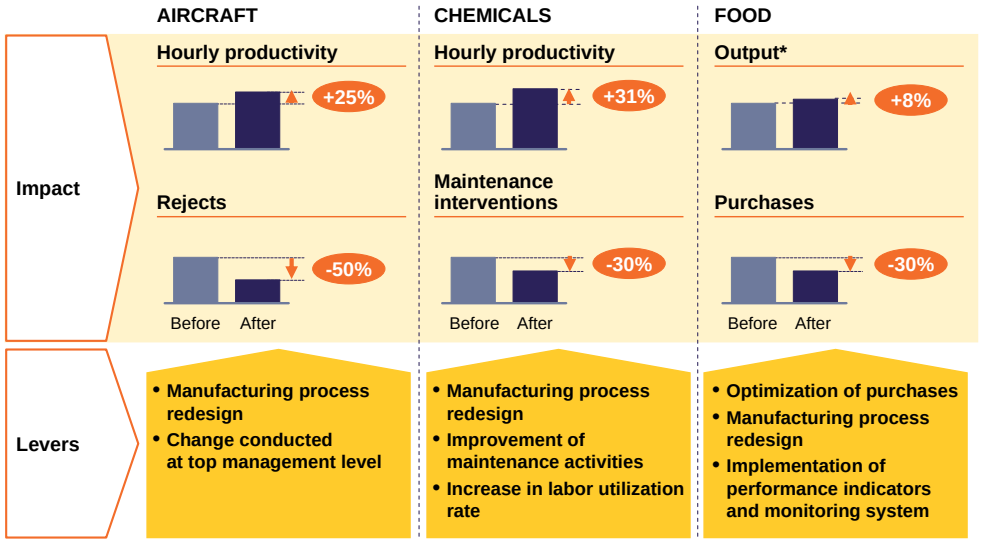


* Total cost: cost of manufacturing plus all additional costs: logistics, insurance, training…

Source: McKinsey study: "California Manufacturing Competitiveness Initiative", 2005; McKinsey analysis

Our sector analyses confirm that in France, and more broadly in Europe, a number of industrial enterprises have already adopted the Lean approach and achieved tangible results *(Exhibit 26)*. Their experience shows that calculating the total real cost of relocation often leads to the conclusion that the potential gains are more limited than initially assumed. Therefore, it is preferable, at least in the short- to medium-term, and especially if there is no need to have a local presence in emerging markets, to optimize existing industrial sites rather than rebuild elsewhere *(Exhibit 27)*. We believe that reinforcing and systematizing this type of approach by deploying a "Lean Initiative" at the national level covering all sectors, is a worthy endeavor *(Exhibit 28)*.

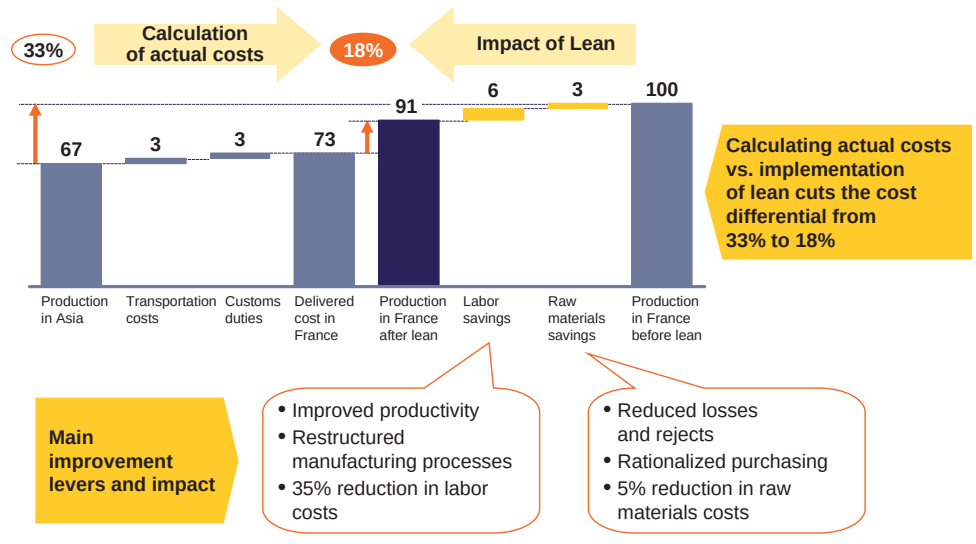
Exhibit 26: The implementation of "Lean" can significantly improve company performance—French and European examples



* At a constant investment

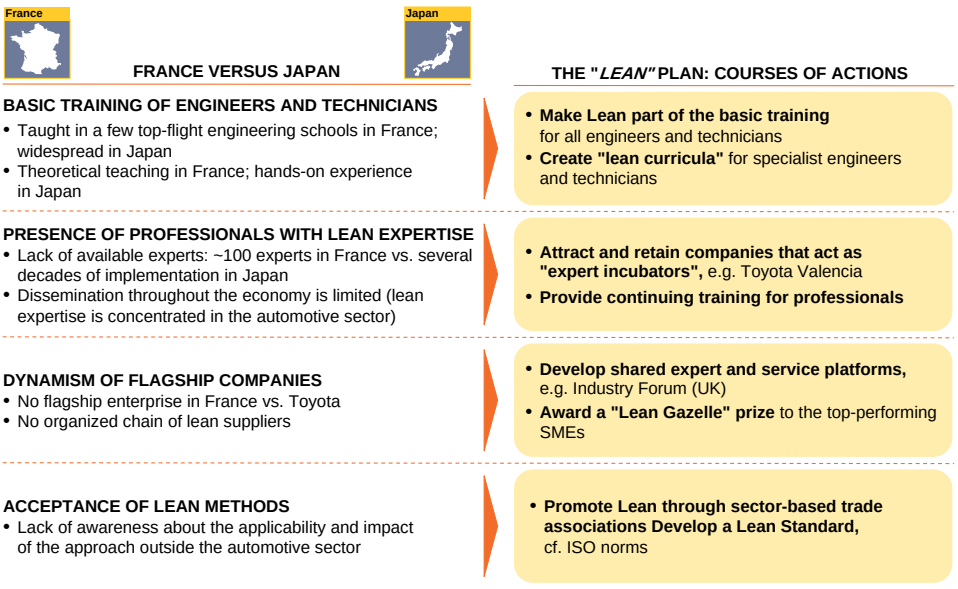
Source: McKinsey

Exhibit 27: The cost barrier is not insurmountable —French example: consumer goods



Source: McKinsey

Exhibit 28: Lean methods are not disseminated widely enough in France



Source: Expert interviews, websites of educational institutes, McKinsey

Three specific points seem pertinent:

At the national level, develop training of Lean experts

Successful implementation of Lean methods requires experts to oversee initial diagnostics, tool implementation, and stabilization of new production methods, in order to ensure the company's transition to a higher level of overall efficiency. With few Lean experts in France, it would be necessary to train several tens or even hundreds of experts to meet the needs of French industry.

We therefore propose actions along three key fronts. First, university-level engineering schools should incorporate Lean thinking and methodology into engineering and basic technical training (taught by business professionals), and offer practical experience through internships, as a means to promote Lean and to create a pool of potential future experts. Second, these same educational establishments should work in cooperation with companies to set up multi-year specialist courses (basic training, plus at least three years' practical experience and theoretical learning, and continuing education) for training Lean experts. Third, the government should work to attract as many exemplary Lean companies to France as possible, especially Japanese firms; the public and the private sector together should promote educational exchanges between engineers and technicians in the two countries (through grants, visits, and personnel exchanges between French and Japanese companies).

At the sector level, favor the deployment of Lean methods

Introducing Lean methodology into all technical coursework, as well as training many experts each year, must be done in conjunction with inciting every site, company, and sector to use Lean methods. Systematic deployment of Lean methodology in manufacturing, logistics, R&D, as well as support functions, risks being blocked in companies due to low awareness of the methods and their potential gains, as well as concern over the possible social consequences. In the United Kingdom, for example, resistance was broken down through concerted action between sectors via trade associations and the government. The UK Forum initiative raised awareness of Lean's value and methods and accelerated its widespread adoption by major companies and industrial sectors.

At the regional level, develop shared expert pools for SMEs

SMEs will not be able to finance the services of Lean experts on their own. However, these experts do not have to be present in a company full-time. Following the start-up phase of Lean-based improvement programs, Lean experts only need to perform regular—weekly or monthly—checks to ensure that the methods are being implemented correctly and that the continuing education plan is followed. It is perfectly feasible for an expert subsequently to work simultaneously with several different companies, which could share the cost. In the United Kingdom, regional-development agencies encouraged Lean deployment in SMEs by creating "Manufacturing Advisory Services"—industry-specialized advisory units. These units offer SMEs information sessions and meetings with Lean experts. Based on need, they also provide local SMEs with direct expertise (when they have their own experts) or a list of certified experts. In both cases, the involvement of experts (internal or third-party) is subsidized by the development agency, so that the cost is affordable to the SMEs.

Such an arrangement could be deployed in France through some 20 regional platforms, a level that seems to correspond best to its SME profile. The large companies present

in the region and the various competent organizations (local communities, chambers of commerce and industry, industrial federations, competitiveness clusters, etc.) could together coordinate initiatives and resources. The regional platforms would provide the SMEs with two types of support to help them integrate Lean more quickly. First, they would organize and run the one- or two-year continuing education programs for SME employees, taught by the recognized experts employed by the platforms. Second, they would indirectly support SMEs by making independent experts available to those companies with urgent needs. The platforms would certify and provide continuing education programs for the independent experts and finance part of the cost of using their services.

We estimate that it would take two to five world-class experts and about 100 independent experts per region to implement this strategy over the next five to ten years. Deploying such platforms to all regions will take time but could, in a transitional phase, be limited to just a few industries or regions.

These efforts aimed at achieving a quantum leap in productivity will lead to employment shifts within, and across, industrial sectors, as well as between industrial and service sectors. In order to maximize the benefit of Lean's productivity improvements, efforts designed to strengthen employment fluidity and to improve employability should be initiated. The sheer size of the project might seem daunting, but is there really a choice?

3.4 - Capitalizing on proximity to clients and markets: French companies at the heart of the European market

Given that market access is often one of the main factors determining where a company locates its assets[19], industrial companies established in France still harbor huge potential due to their position in their domestic market but also their geographical closeness to very substantial European markets *(Exhibit 29)*. These companies can take advantage of this proximity—both to markets and customers within those markets—by developing products and business models based on two essential dimensions: quality (real and perceived), and lead-times.

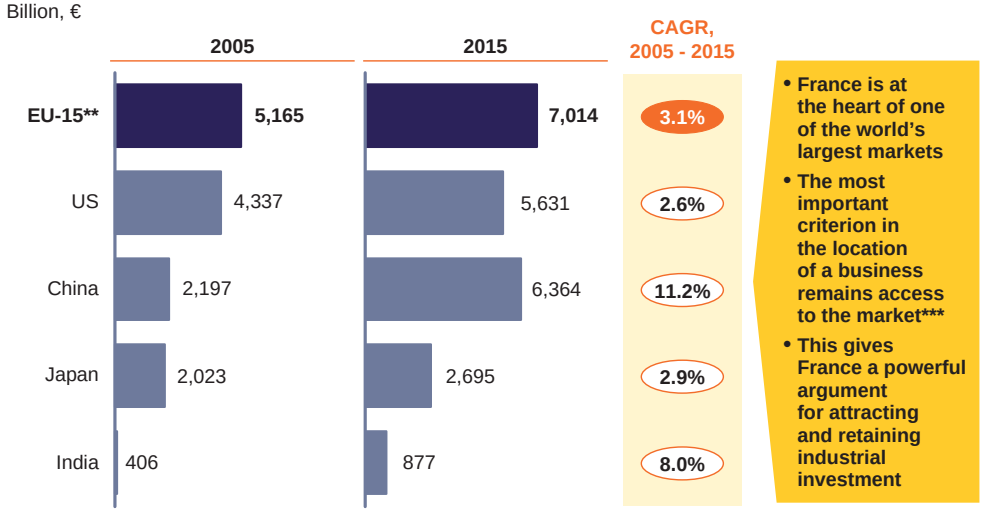
"Companies can develop and launch new offers that more distant competitors cannot rival."

Sector analyses reveal several successful examples of company-initiated actions

First, in terms of quality, physical proximity to markets and the intimate knowledge of customers this confers provide strong advantages for developing product offerings superior to distant competitors. Our analyses show that high-performing companies concentrate on those activities that offer the greatest advantages—creation, design, conception, marketing, and distribution.

The major French luxury-goods players in the "strongly branded" sector grouping, for example, have leveraged their creative heritage, and their proximity to European markets where new trends are set, to create world-leading brands and conquer export markets.

Exhibit 29: France is at the heart of one of the world's largest markets



* Production + Imports - Exports. Figures for ISIC category 3; ISIC category 4 (electricity, gas and water) is not included
** Luxemburg excluded
*** Fontagné & Mayer, "Le choix de localisation des entreprises", (2006), Head and Mayer (2004), Bush et al. (2005)
Source: Global Insight's WIM; McKinsey analysis, Fontagné & Mayer, "Le choix de localisation des entreprises", 2006

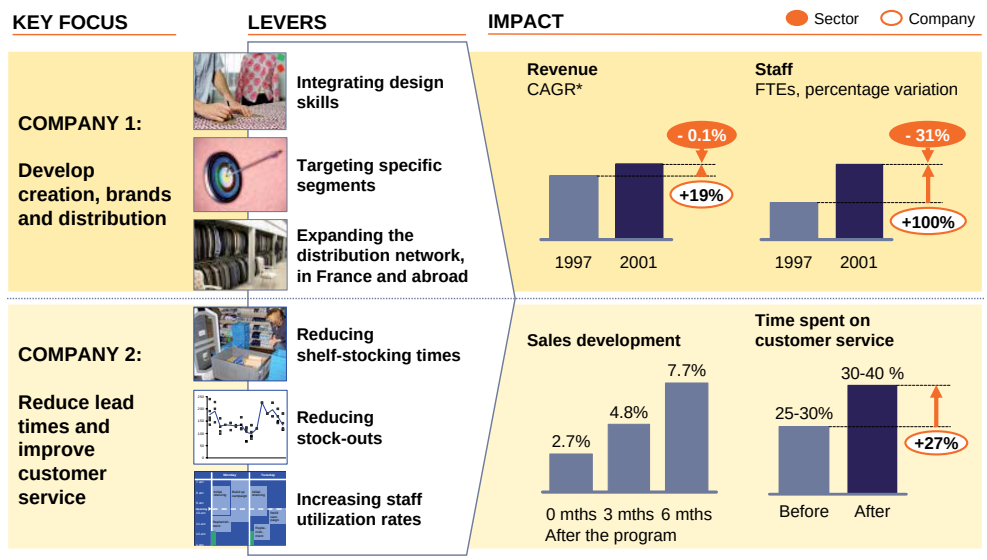
[19] See Lionel Fontagné et Thierry Mayer, Le choix de localisation des entreprises, L'économie mondiale en 2006, CEPII.

However, mastering creativity, branding, and distribution are by no means the sole domain of "strongly branded" sectors. By systematically identifying profitable customer niches, "capturing" fashion trends, and owning exclusive distribution networks, apparel companies have conducted successful strategies and have reported remarkable performances, in contrast to the experience of most companies in the "highly exposed" group *(Company 1 in Exhibit 30)*.

Other companies in the same sector have learned to exploit their market-proximity advantage by developing high-quality customer service. By cutting delivery and replenishment lead-times, reducing stock shortages, and developing associated services, they have been able not only to improve customer satisfaction but also to achieve a substantial increase in sales, illustrated by companies in the apparel business *(Company 2 in Exhibit 30)*. Similarly, in sectors as varied as chemicals and consumer electronics, focusing on manufacturing and maintenance processes, on priority targeting, on performance management, and on organization, has enabled companies to achieve significant improvement in production lead-times, delivery delays, and service quality *(Exhibit 31)*.

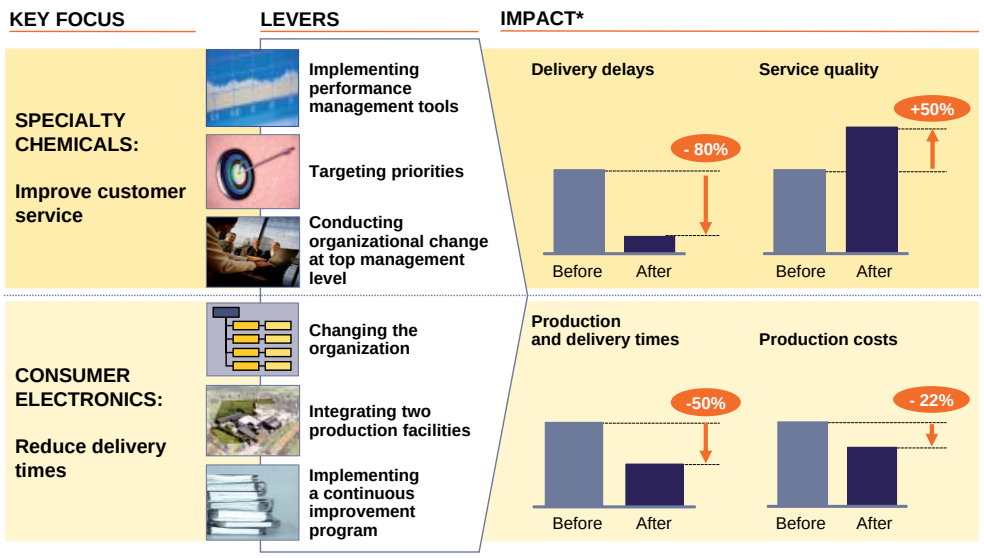
Finally, by combining geographic proximity with an intimate knowledge of customer expectations, real or perceived, companies can develop and launch new offers that more distant competitors cannot rival. By combining closeness to markets, customer knowledge, and operational mastery of product-launch processes, one consumer-electronics company (classified as "highly exposed") was able to reduce its product launch lead-time by 30 percent and improve its margins by between 30 and 50 percent over the life of the product *(Exhibit 32)*.

Exhibit 30: The proximity factor—French example: apparel



*Compound Annual Growth Rate
Source: Diane database; McKinsey analysis

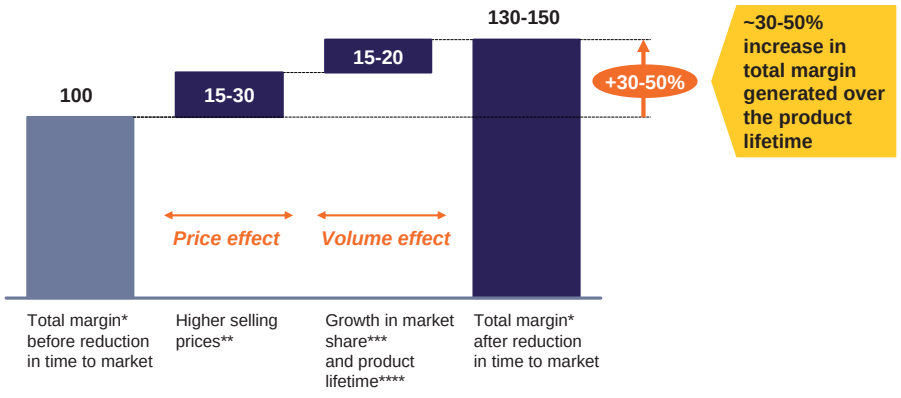
Exhibit 31: Improve customer service and lead times—specialty chemicals and consumer electronics examples



* At constant investment
Source: McKinsey

Exhibit 32: Reduce the time to market for new products —consumer electronics example

IMPACT OF A 30% REDUCTION IN TIME TO MARKET
Total margins* generated by the product over its lifetime



* Based on a product lifetime of 18 months
** Selling price increased in first months due to lack of competition for the same product
*** The market share acquired during the first months of sales was maintained
**** Bringing the product to market before the competition is one way of extending the product lifecycle
Source: McKinsey

Public authorities can amplify private efforts through targeted actions

The responsibility for improving responsiveness and exploiting the advantages of French and European market proximity rests primarily with companies themselves. However, government can support the efforts of companies and sectors in a variety of ways.

For instance, in "strongly branded" sectors—and particularly in luxury goods—many skills are in danger of disappearing as experienced craftsmen and women retire. Government can play a role in ensuring that their know-how is preserved and communicated to new generations of craftsmen and women through educational programs, as well as facilitating company handovers.

In the "regional" group, weaknesses in the transportation infrastructure (notably railways and ports), most certainly impedes business growth.

Finally, in "highly exposed" sectors, such as apparel, greater flexibility in working conditions could help improve delivery lead-times, supply-chain responsiveness, and distribution networks efficiency.

3.5 - Focusing resources on high-potential sectors and areas of excellence

Globalization relentlessly drives companies to specialize in their areas of excellence and to reach an ever-increasing critical mass in order to stay in the global race. Given that resources are limited both in the public and private sectors, it is vital that businesses (and government) focus what resources they have, in order to maximize the impact of whichever courses of action they choose. We believe they need to be focused at three different levels.

At company level, focus on areas of excellence and optimize economies of scale

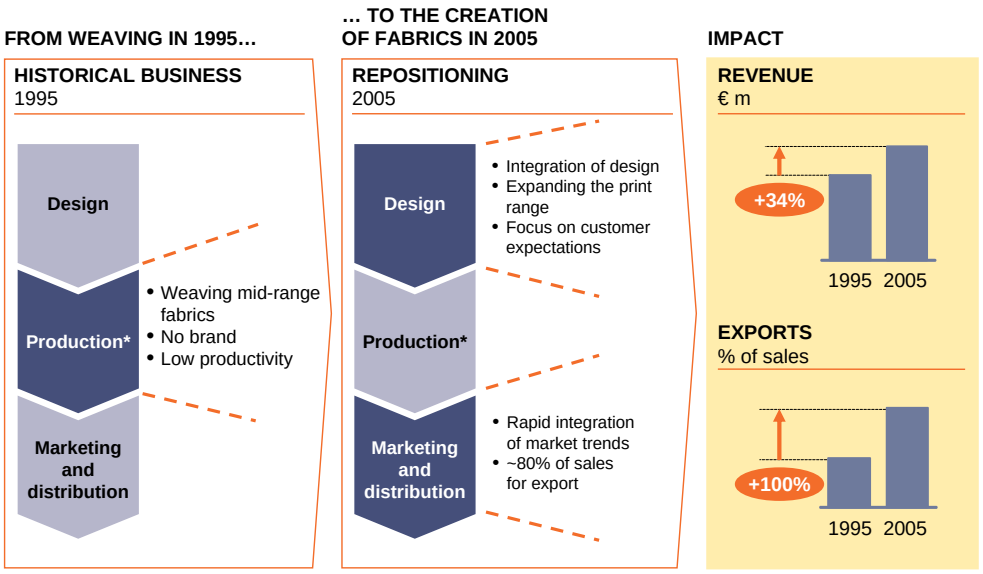
In those industrial sectors that are increasingly exposed to international competition, French-based companies must pursue a two-pronged strategy:

- **Focus on their areas of excellence and leverage the complementarities between companies to profit from globalization**—globalization is bringing a new competitive dynamic to bear. In most sectors, companies are reshaping their value chain, significantly improving their cost base, as well as their access to markets and assets (tangible or intangible). Some companies are capitalizing on these changes by focusing on their areas of excellence (products or services), and reconfiguring their business models and systems (R&D, production, distribution, and sales). Moreover, they are also building partnerships with other companies to exploit complementarities between their respective areas of excellence and therefore enable them to realize globalization opportunities (access to markets, assets, technologies, and suppliers). In the global economy, a company can either attempt to achieve a leadership position on its own or, if such an ambition appears to be beyond its capacity, by joining a "leading network" (through alliances or co-operations). Several companies have decided to focus on, develop, or pool their areas of excellence with others in this way *(Exhibit 33)*.

"Globalization relentlessly drives companies to specialize in their areas of excellence and to reach an ever-increasing critical mass in order to stay in the global race."

Major companies are relatively well-equipped to employ such strategies; they know their markets, suppliers, and potential partners. For SMEs, however, the task is more difficult. We propose a new support system to help them cross the globalization threshold, essentially by creating platforms or networks of experts on each of the major target markets, both by sector and geography. These platforms could fulfill five functions: (1) monitor trends and markets; (2) provide diagnostic assessments to help companies identify their areas of excellence; (3) optimize supply and subcontractor relationships to help companies reconfigure their business models and systems; (4) offer export support to help companies identify and win market share; and (5) achieve co-development via an open network aimed at developing new products and services. Ten major industrial-sector federations would be sufficient, in our view, to put these national level platforms in place. They would recruit their own experts, managed in coordination with large and small companies, and be financed partly by charging companies for their services, partly by redirecting the budgets of economic-development agencies. Cooperation between the private and public sectors is essential if such a strategy is to succeed.

Exhibit 33: At the company level, focus on the activities with the highest added value



* Historical core business

Source: SESSI; INSEE; press review; McKinsey

■ **Optimize economies of scale, at the national and European level, concentrating investments, and progressively restructuring assets**—our sector analysis reveals an untapped potential for economies of scale, particularly in those sectors where size significantly affects R&D or production. We offer two examples that illustrate the importance of economies of scale, one drawn from the "innovation-driven" group, and the other from the "regional" group. The aeronautics and defense industry demonstrates the potential opportunities for consolidating European-wide demand *(Exhibit 34)*. The basic chemicals industry highlights the sub-optimal scale of French production sites *(Exhibit 35)*.

In order to optimize economies of scale, at the national as well as at the European level, private-sector players should concentrate their future investments, seek out mergers and, finally, restructure their assets to reach critical mass. Backing from the public sector is often necessary *(see Box 5)*.

Exhibit 34: European countries would be better off if they grouped together their major defense projects and avoided redundancies

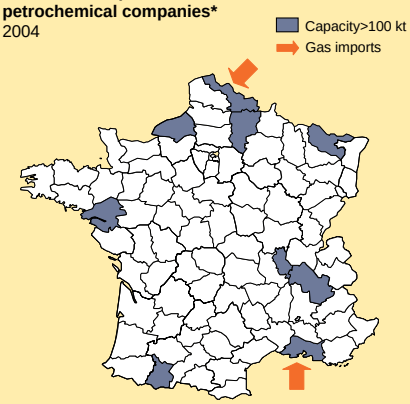
	PLATFORMS/ SYSTEMS	NUMBER OF PROGRAMS	KEY EUROPEAN PROGRAMS
AIR	Combat aircrafts	3	• Rafale (FR, Eurofighter (UK-GE-IT-SP), F35JSF (EU+RU-IT-DK-NL)
	Military transportation aircrafts	2	• A400M (FR-UK-GE-SP-B-TR), C130J (IT)
	Refueling tanker aircrafts	2	• Boeing 767 (IT), Airtanker (UK)
	Maritime patrol aircrafts	2	• Nimrod (UK), Orion-MPA (GE-IT)
	Attack helicopters	2	• Tiger (FR-GE-SP), Apache (UK)
	Transportation helicopters	2	• NH90 (GE-FR-IT) , EH101 (UK)
	Satellite transmission systems	4	• Skynet 5 (UK), Sicral (IT), Hispasat (SP), Syracuse III (FR)
	Satellite observation systems	3	• Sar-Lupe (GE), Helios II (FR-RU-SP-B), Cosmo Skymed (IT-FR)
	Cruise missiles	2	• Storm shadow (FR-GE), Tomahawk (UK)
	Air-to-ground missiles	2	• AASM (FR), Taurus (GE-S)
	Antitank missiles	2	• TRIGAT (FR-GE), Javelin (UK),
	Ground-to-air missiles	5	• ASRAAM (UK), AMRAAM (EU-SP), Aster-PAAMS/SAAMS (FR-IT-UK), Meteor (FR-UK-GE-SP-S), MEADS (UE-IT-GE-FR)
GROUND	Heavy armoured vehicles	3	• Leclerc (FR), Leopard 2 (GE-SP), Ariete (IT)
	Light armoured vehicles	4	• Pizzaro (SP), VBL-VBCI (FR), Fennek (GE), Puma (IT)
	Equipment of the infantryman	3	• FELIN (FR), FIST (UK), Infanterist der Zukunft (GE)
SEA	Aircraft carriers	3	• Charles de Gaulle (FR), Future aircraft carrier (UK), Andrea Doria (IT)
	Anti-air frigates	3	• Horizon (FR-IT), T45 destroyer (UK), F100-124 frégates (GE-NL-SP),
	Mutlimission frigates	1	• FREMM (FR-IT)
	Projection ships	2	• BPC (SP), BPC (FR)
	Corvettes	3	• K130 (GE), Cigala Fulgosi (IT), Visby (S)
	New generation nuclear-powered ballistic missile submarines	1	• SNLE-NG (FR)
	Attack submarines	6	• Barracuda (FR), Astute (UK), Scorpene (FR-SP), Type 212 (GE-IT), Viking (S), S80 (SP)

Source: Parliamentary report on the naval industry, June 2004; Teal Group report (2003-2004); McKinsey analysis

Exhibit 35: The French chemicals sector is geographically dispersed and has a subscale asset base

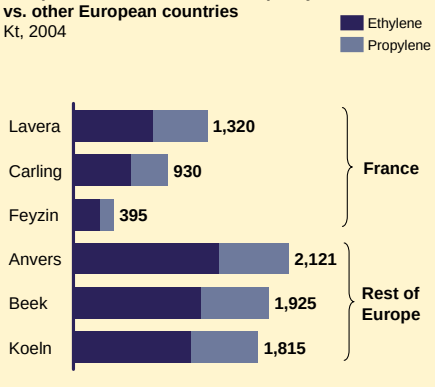
DISPERSED PRODUCTION FACILITIES POORLY CONNECTED TO CHEAP GAS SUPPLY

French-based production facilities of selected petrochemical companies*
2004



A SUBSCALE ASSET BASE

Comparison of steam-cracker capacity in France vs. other European countries
Kt, 2004



* Single product: acetic, acetone, acrylic, benzene, butadiene, butene-1, dmt, eb, ethylene, hdpe, ldpe, lldpe, mtbe, ox, pa, pam-fibres, pam-resins, pc, pet, resins, phenol, po, propylene, ps, pta, pvc, styrene, tdi, toluene

Source: INSEE, SESSI, Diane, Tecnon, McKinsey analysis

Box 5: Examples of economies of scale by sector

Three relevant examples of economies of scale are:

1. **Power generation and distribution:** reaching critical mass appears to be necessary to deal with giant suppliers of fossil fuels;
2. **Defense:** fragmented players and budgets at the European level appear sub-optimal compared with the US defense giants;
3. **Industrial chemicals:** small, landlocked sites seem to leave the country poorly equipped to counter competition from the integrated platforms of the Middle East, or even of Europe.

In all three instances, companies and public authorities (both French and European) should attempt to work out solutions to achieve, or recover, the required critical mass in the medium-term.

For instance, one could imagine the progressive construction of an integrated chemicals platform, either on the Channel or on the Mediterranean coast, putting together assets from both the public and private sectors in France (factories, schools, research centers, port infrastructures, and pipelines). Any abandoned assets, notably decommissioned chemical plants, would then be managed by a recovery and recycling fund (environment, urban planning), co-financed by the state, local authorities, and businesses.

For public authorities, concentrate national and European resources on buoyant sectors

In addition to the roles that public authorities should play in adapting regulation and creating "consolidated" demand, especially in areas where public-sector markets are fundamental[20], they should also concentrate on those sectors that have the greatest potential for value- and job-creation. They have two main levers at their disposal: allocating public-sector R&D resources, and setting priorities for the education system. This type of intervention is not intended to "specialize" French industry[21] by abandoning companies in the "highly exposed" sectors, or to foster a return to the industrial policies of the 1960s. Rather, it takes into account the market realities of a global economy, which determine which sectors have growth prospects—and how large—and which don't. This intervention should aim at encouraging companies' competitiveness in buoyant sectors, but also helping in the transformation of those sectors whose future potential is most limited. While there is no doubt that individual companies can succeed in any sector, overall prospects are far more promising in France's "innovation-driven", "strongly branded", and "regional" sectors (and even for some companies in the "at a crossroads" sectors) than they are for the "highly exposed" group.

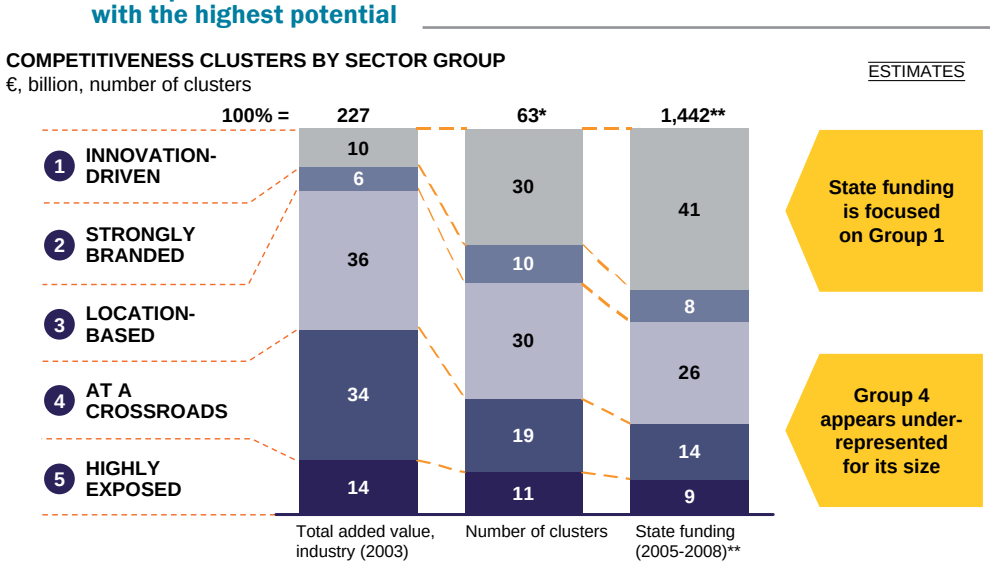
[20] We have seen how important public markets are in the aeronautics and defense sector and the public sector has as important a role in many other sectors too, especially in stimulating innovation as we will discuss later in this report.
[21] A report from the Economic Analysis Council highlighted over-specialization in France, notably in exports, which may put at risk the competitiveness of French-based companies.

Concentrating public R&D funds and setting educational system priorities so that they are aligned with the needs of buoyant sectors necessitates strong political will. France has already embarked on this road, by, for example, creating "competitiveness clusters", consisting of clusters within which the most promising sectors are best represented *(Exhibit 36)*. Increasing, and better-focused funding, as illustrated by the example of Ireland, would further strengthen this effort *(Exhibit 37)*. Public authorities need to consider three types of actions to complement existing policies:

- Foster the widest-possible awareness of the changes required in France's industrial landscape, the identification of the most buoyant sectors, and the paramount need to focus resources on these sectors;
- Determine the most effective level for public action (European, French, or regional); while the national or European level appears to be right for public policy on R&D, the regional level appears to be best suited for supporting the transformation of "highly exposed" companies;
- Implement governance mechanisms to ensure continuity in public policy, both on the different levels of action (European, French, regional), and over time (for periods of five to ten years).

Setting priorities and focusing public resources on buoyant sectors and areas of excellence could be replicated on a continental scale. The European Union could play a useful role in ensuring the coherence and coordination of national initiatives with similar aims, and in reinforcing complementarities across borders in order to avoid duplication and therefore maximize the probability of reaching the necessary critical mass.

Exhibit 36: Focus public resources on sectors with the highest potential



* 4 clusters of service activities were omitted: Aix-en-Provence (natural hazard management); Le Havre (logistics); Nantes (civil engineering); St Etienne (engineering)

** Includes: for all 67 clusters (the figure of 1 442 is for the 63 clusters): €300m in tax relief, €600m in business competitiveness funding, €500m from ANR, Oseo and AII, and €100m from other sources; estimates based on 50% of the amounts allocated to the 15 "global" or "world-class" clusters, and 50% of the amounts for the other 52 clusters

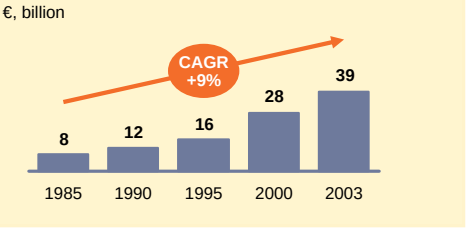
Sources: INSEE; SESSI; McKinsey analysis

Exhibit 37: Ireland succeeded in its economic development by focusing its actions

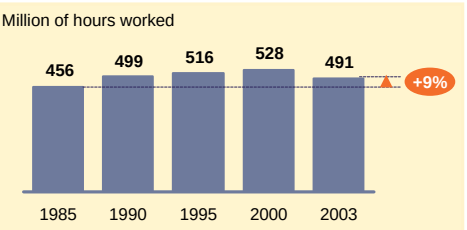
MAIN ACTIONS

1. **Implementation of three 4- to 6-year "National Development Plans" since 1989, each with a single priority:**
   - Macroeconomic reforms: 1989-1993
   - Foreign investment: 1994-1999
   - Regional growth: 2000-2006
2. **Concentration on macroeconomic reforms that enhance the country's attractiveness and competitiveness**
   - Massive investment in education (esp. university-level)
   - Infrastructure (transport investment: +16% per year since 1992)
   - Controlled wage increases (agreements negotiated at national level)
   - Controlled interest rates (integration into the Euro Zone)
   - Lower corporate taxes (2005: 12.5% vs. 33.3% in France)
3. **Focus on measures to boost foreign direct investment and exports**
   - Specific aid for companies (to encourage investment in tangible assets, employment, training and R&D)
   - Creation of a free trade zone in Shannon (no export taxes) and industrial parks
   - Joined the European Union (1973)
4. **Creation of 4 dedicated support agencies**:
   - For R&D: SFI
   - For exports: Enterprise Ireland
   - For investment in Ireland: IDA Ireland
   - For innovation: Forfas

GROWTH IN THE ACTUAL ADDED VALUE IN IRELAND'S INDUSTRIAL SECTORS



GROWTH IN INDUSTRIAL EMPLOYMENT IN IRELAND



Source: Press research; McKinsey analysis

3.6 - Stimulating, decompartmentalizing, and spreading innovation

A very broad consensus exists today that innovation lies at the heart of industrial competitiveness, whether it involves products and services or internal company processes and procedures. Our analysis of France's industrial sectors shows that, while innovation may be more important for some sectors than for others, it is still a significant issue for all. A number of comprehensive reports have described innovation-related problems in the French economy overall and in the industrial sector in particular[22]. We won't detail these here. In this report, we look at ways to improve, at the sector level, the creation, diffusion, and application of innovation—all three of which are essential for improving a country's productivity and, therefore, competitiveness *(Exhibit 38)*. We discuss three mutually reinforcing efforts: stimulating the creation of innovation, decompartmentalizing its diffusion, and favoring its optimal utilization.

"Improve, at the sector level, the creation, diffusion, and application of innovation."

Stimulating the creation of innovation

It is critical to work on two aspects that favor innovation: creating centers of excellence that bring together the best researchers, students, teachers, and companies; and improving the conditions for the growth and financing of private innovation, particularly for SMEs:

- **Creating centers of excellence**—innovation comes from confronting problems with the best problem-solving talent. This is why innovative companies, or those that depend on innovation, choose to concentrate geographically near the best universities or research centers. These "clusters" are usually concentrated in a relatively tight geographic area, facilitating physical interaction between people and the attainment of critical mass, and therefore multiplying the potential for innovation.

Exhibit 38: Impact of innovation on a country's productivity

INNOVATION DRIVERS	IMPACT
Development	• A company developing innovations can increase productivity provided it succeeds in sustaining its first-mover advantage • This rule can be verified in sectors where the ability of competitors to adopt innovation is limited and where innovative companies succeed in preserving their advantage (patent applications), but also in network-based sectors favoring a "winner-takes-nearly-all" phenomenon • A country whose companies develop most innovations in a given sector will benefit from a comparative productivity advantage
Dissemination	• Easy-to-copy innovations are quickly adopted by competitors • If these innovations become more widespread in a given country, this can generate wide productivity gaps across nations (e.g., if lean production methods became common place in one country, the productivity of this country would significantly exceed the average)
Exploitation	• Even if innovations were adopted by companies in all countries, their impact on productivity would vary according to the specific factors of each domestic economy • For example, many ICT*-based innovations can only be fully leveraged above a certain level. A high concentration level in one sector makes it possible for companies to reap more benefits from an innovation • Consumption habits also generate disparities in the use of innovations

* Information and Communication Technologies

Source: "Reviving French and German Productivity", McKinsey 2002

[22] See Bibliography.

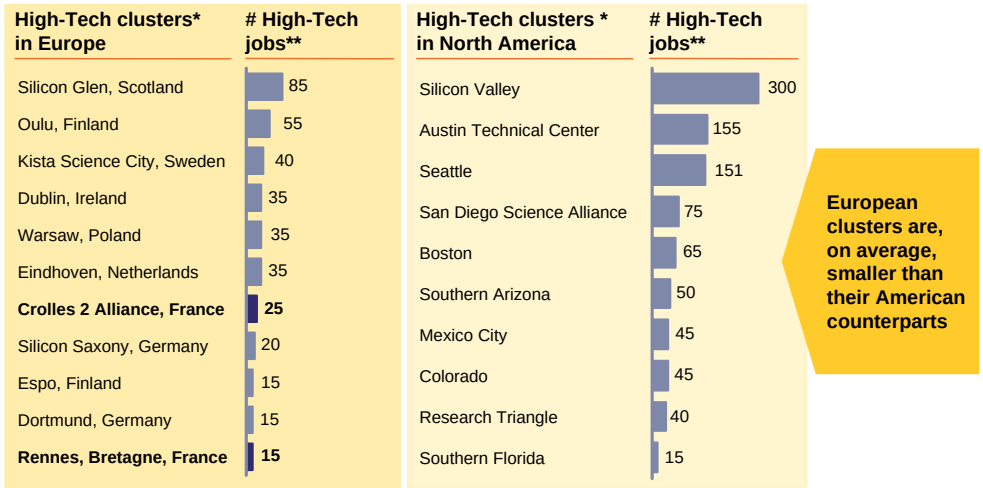
Just as in Newtonian physics, these critical masses have the ability to attract (1) researchers, students, and companies to gather in the same location, thus reinforcing the size and attractiveness of the cluster; (2) public and private interest and investment; and (3) other critical masses, which, in the same way as planets, come to take positions alongside them (notably by developing collaborative arrangements and networks). In this exercise of attaining critical mass, it is useful to note that European "clusters" are often far smaller in scale than their American counterparts[23] *(Exhibit 39)*.

France can already point to a number of successful models, but it must now expand and reinforce this kind of arrangement[24]. It can achieve this by concentrating on the highest-potential candidates among universities, research centers, research teams, and projects, but also by opening up public research and universities to private co-financing, and especially to the recruitment of foreign students, lecturers, and researchers. These centers would then find it less difficult to attract innovative companies and so begin to form a virtuous circle that would lead to reaching critical mass. The "Treaty for Research", which French legislators recently voted through, contains programs that go in this direction[25].

This model would be even more effective if it was implemented Europe-wide. We believe that building "clusters" on a European scale is imperative if French, and other European companies, are to stay in the global race. Continent-wide networking of many medium-sized national "clusters" could be a useful first step, all the more

Exhibit 39: European clusters are smaller than their counterparts in North America

REPRESENTATIVE EXAMPLES OF HIGH-TECH CLUSTERS* IN EUROPE AND IN NORTH AMERICA



* Corresponding to: IT, software, semiconductors, consumer electronics, datacom; clusters accounting for more than 15,000 High-Tech jobs
** High-Tech jobs= staff (researchers, engineers, specialists) working in companies and public/private research centers in the corresponding sectors

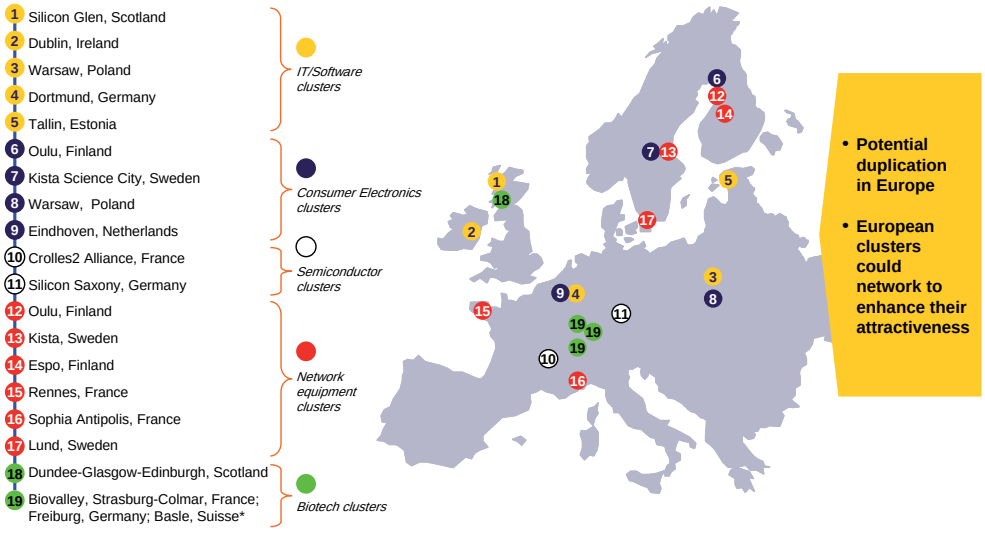
Source: Press articles; INSEE; McKinsey analysis

[23] A consolidated list of "clusters" and the precise number of high-tech jobs they generate is not available, so names and figures given here are for illustrative purposes only.
[24] France has historically favored grouping laboratories and universities in networks rather than structuring them around major centers of excellence.
[25] "The Treaty for Research" presents two programs. The first, called RTRA, aims to regroup the best French units to favor the emergence of top-level scientific centers by giving them dedicated financing of many hundreds of millions of euros. The second consists of creating cooperative scientific foundations, which the private and the public sector can govern together...

so because Europeans work efficiently in networks *(Exhibit 40)*. However, in the longer-term, we believe that it is necessary to aim for critical mass levels capable of rivaling the largest global "clusters". This would require concerted action by several countries, backed by a very strong political resolve.

- **Improve the conditions for the financing and growth of private innovation.** The diagnosis is well-known: There is an innovation-funding gap, due in large measure to a shortfall in private financing. While many causes have been suggested to explain this[26], and a certain number of initiatives have already been undertaken—such as the creation of the Agence de l'Innovation Industrielle (Agency for Industrial Innovation), or a more robust role for France's Office of Science and Technology (OSEO)—we feel that further action is required. On top of simply increasing the amount of financing available, which is already considerable, it is also important to create favorable conditions for investing these sums in high-potential projects and companies, especially SMEs. In comparison with their international counterparts, French SMEs lack dynamism. For instance, three times as many British SMEs pass the €5 million revenue threshold within ten years of their creation as French SMEs *(Exhibit 41)*. The vicious circle of low investment and weak performance among French SMEs needs to be broken.

Exhibit 40: European clusters are fragmented and could profit from creating networks

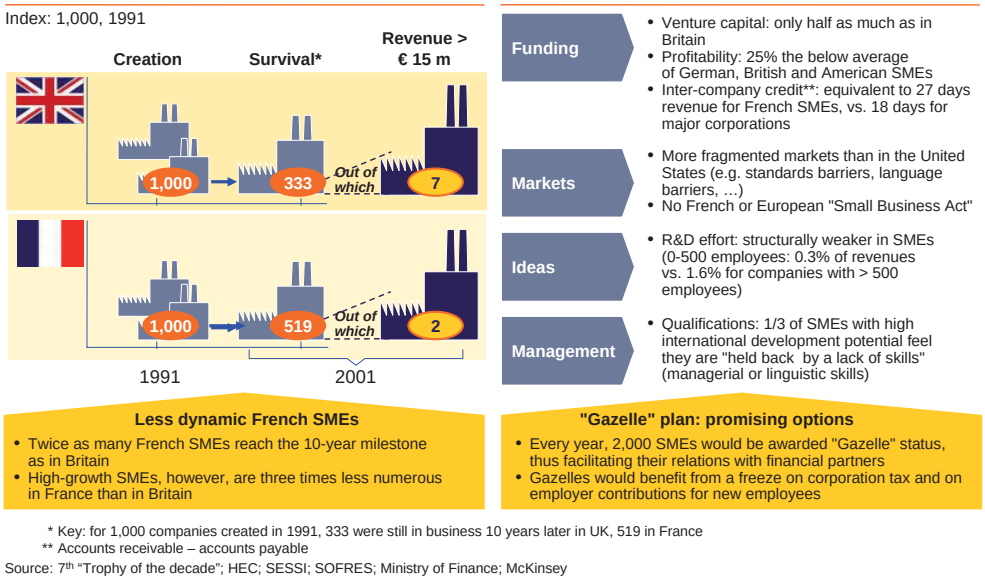


* Organized into a network (Strasburg-Basle: 140 km; Strasburg-Freiburg: 100 km; Basle-Freiburg: 70 km)

Source: Press/web clipping; Greater Boston Chamber of Commerce 2005 Leading Industry Report; Boston Globe 100 of 2005; US Bureau of Labor Statistics; bostonsearch.com; McKinsey analysis

[26] These include specialization in sectors that have little use for private R&D, and the risks inherent in long-term R&D projects that companies are reluctant to take. See J.L. Beffa, "Pour une nouvelle politique industrielle", 2005.

Exhibit 41: French small businesses are held back in their development



* Key: for 1,000 companies created in 1991, 333 were still in business 10 years later in UK, 519 in France
** Accounts receivable – accounts payable

Source: 7th "Trophy of the decade"; HEC; SESSI; SOFRES; Ministry of Finance; McKinsey

France has already embarked in a highly promising direction with its "Gazelle Plan", but we believe that this could be improved in two ways. First, it could stimulate private financing, mainly through changing the tax regime for shareholders and individuals in order to generate a large volume of venture-capital activity and to enable entrepreneurs to take profits from their risk-taking[27].

Second, it could support growth by, for instance, providing technical and managerial support for growing SMEs (insofar as it is possible to set up such a scheme efficiently), the abolition of administrative thresholds, or even the creation of a French "Small Business Act"[28] that would enable SMEs to access far larger markets.

[27] French venture capital is 20 times less developed than in the United States; France has a tenth of the business angels working in the United Kingdom.
[28] In the United States, the Small Business Act lets public authorities back SMEs. Among other mechanisms, it guarantees SMEs financial and technical support as well as reserving public-market contracts..

Decompartmentalizing the diffusion of innovation

Our sector analyses show that innovation issues lie partly in improving creativity potential, but also in spreading its diffusion. The question is not only how to create innovation, but should be asked this way: How to create useful innovations and how can they best be diffused? To answer this double question it is important to decompartmentalize innovation on two levels:

- **Decompartmentalizing the university–public research–business triad—**innovation is born in public research centers, universities, and businesses, and it therefore necessary to get these three worlds to interact as fluidly as possible. France has already begun to bring them closer together with initiatives such as industrial technical centers (CTIs) and contractual research structures[29]. However, a lack of understanding, cohesion, and coordination still limits the French system's capacity for innovation. To make further progress, three courses of action could be pursued:

1) *Universities should establish, alongside their general education mandate, an industrial-research mission in partnership with business*. To implement this, each university must be encouraged to articulate clearly its own scientific policy and priorities, particularly those that could be of interest to industrialists. Universities would need more funding and greater autonomy (freedom to recruit and set professors' salaries, private-sector financing, etc) in order for this initiative to succeed. In parallel, businesses would be far more involved in the functioning of these revitalized universities (participation in a more robust administrative council, and in the articulation of their research needs).

   Finally, universities should undertake an in-depth study into the education and employability of doctoral students, as well as the status of university professors and their recruitment by companies (let's not forget that the strength of US universities is due, in large part, to such factors).

2) *Improve the interaction between public research organizations, universities, and businesses*, for instance through multi-year exchanges between public and private research, as well as between researchers and teachers. Researchers from public organizations and business should both be encouraged to teach; teachers should participate more fully in research projects, both public and private. Such engagement would enable teachers to stay up to date with the latest advances in research, would allow researchers to understand students' changing expectations, and students to get a taste of real-life public and private-research issues.

   It would also help business develop an interest in research (for example, by introducing directors with research experience onto the boards of companies; by providing boards with systematic access to scientific advisers; or by introducing incentives for the recruitment of doctoral students). In this way, the private sector would see that laboratories not only generate publications and patents, but more importantly, the researchers and professors who could contribute so much to enriching business. For their part, laboratories would become more attuned to the business world, through, for instance, regular meetings organized between companies and researchers and the systematic creation of "innovation exploitation and transfer units" within laboratories.

[29] CTIs are public utility organizations governed by private law. They were created to support innovation and are regulated by objectives and resources set for a period of four years. There are 17 such centers in France with an overall budget of €460 million (50 percent from the government and 50 percent from industry contracts). The 27 contractual research structures, either independent or linked to France's grandes écoles, have revenue of €200 million (4 percent from the ANVAR subsidy, the balance coming from industrial contracts).

3) *Tackle the SME-specific issue of accessing research*. Particular effort should be devoted to SMEs who lack the financial and human resources to support in-house research, and to developing links with public-sector research. A number of support and incentive plans already exist in France. Paradoxically, French SMEs' access to research appears to be constrained by their sheer number, the multiplicity of organizations (OSEO, DRIRE[30], etc), and the accompanying complexity (tax credits, community research program framework, etc.). The government can play a vital role by increasing the budgets allocated to SMEs, but particularly by simplifying structures and procedures. The most straightforward approach might be to group all financing within a single agency and to rely on university- and laboratory-based "exploitation and transfer units" to manage access to researchers and patents.

Such efforts can draw inspiration from French successes in this area, including the Toulouse aerospace cluster and the Minatech cluster in Grenoble, as well as international institutions such as Germany's Fraunhofer institutes. These are successful centers of applied research that respond not only to the needs of particular sectors, but also take into account regional industrial clusters. For example, businesses specializing in machine-tools are situated in the southwest of Germany, where the automotive industry is largely based[31].

- **Decompartmentalizing innovation across companies**—creating links between companies is essential to foster innovation. Except in the case of a few very large corporations with their own unrivalled innovation capacity, there are clear benefits in building up inter-company relationships of varying durations. The purpose would be to develop creative potential (by pooling ideas, talents, and resources), to share costs and investments, to facilitate diffusion (within a sector or between sectors) and to maximize the use of innovation (mainly by achieving economies of scale in supply and demand). France's competitiveness clusters are a step in the right direction.

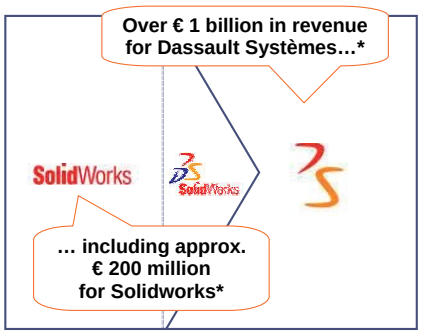
  A number of sector examples illustrate successful decompartmentalization efforts. The automotive industry in the "at a crossroads" group, for instance, demonstrates the need to bring together the major players to achieve the critical mass necessary in those areas that require cutting-edge technology, which is becoming more difficult for a single company to finance and source on its own (e.g. new hybrid engines). Another example is the US high-tech sector, where companies take a far greater interest than their European counterparts in innovative SMEs. They collaborate closely with them on precisely defined programs, benefiting from the agility and skills of these smaller players and, in return, contributing to their growth (often, in the end, by acquisition). There are a number of examples of best practices in these types of relationships *(Exhibit 42)*.

  In most cases, companies are capable of managing these relationships—but the government could help structure the framework for cooperation, for instance, by clarifying shared management of intellectual property, management of resources, and apportioning of risk.

[30] Directions Régionales de l'Industrie, de la Recherche et de l'Environnement—France's regional industrial and environmental research agency.
[31] It should be noted that the Treaty for Research plans to create "Instituts Carnot"—20 of which were selected in March 2006—which will regroup research units based on the Fraunhofer model and offer privileged financing.

Exhibit 42: **Examples can be found of fruitful cooperation between large and small companies**

DEVELOPMENT OF SOLIDWORKS



The offer

- SolidWorks is a leader in the field of computer-aided 3D imaging, offering products such as 3D mechanical design solutions and data management. Created in 1993 by an American software house, SolidWorks was acquired by Dassault Systèmes in 1997

Commercial success

- Solidworks has installed more than 500,000 software licenses to date, and has brought a major product to market every year since 1995

Basis of success: Dassault Systèmes' flexible structure. Acquired in 1997, Solidworks continues to be based in the United States and maintains a wide degree of autonomy, while benefiting from synergies with CATIA, Dassault Systèmes' flagship 3D software

* Estimated figures for 2006
Source: Press review; McKinsey analysis

Amplifying the leverage of innovation

The need for critical mass in order to maximize innovative potential is as relevant to the markets in which a company operates as to the company itself. The measures we have described to help companies achieve economies of scale should be complemented with action to help markets themselves reach critical mass, particularly in the industries of the future.

- **Foster new markets at the European level to generate innovation for the industries of the future**—we believe it is essential to stimulate current—and more importantly, future—high-volume demand for top-quality, highly-innovative goods and services, notably in the industries of the future. The fragmentation or weakness of innovation in the European market has led some highly innovative European companies to migrate, on their own or following acquisition, to the United States. To avoid more such departures, it will be necessary to put the conditions in place to develop efficient Europe-wide markets—large, but homogeneous; highly competitive; and open equally to large companies and to SMEs—that would give companies the scale necessary to launch and develop innovations, and profit from the productivity and competitiveness gains that would follow. We believe that the public authorities should concentrate on creating the conditions favorable to stimulating demand on a European level instead of focusing on specific technologies. Take transportation, for example—the public authorities could set a target for reducing energy consumption per mile driven, and leave it to the market to determine the best technologies for achieving this aim.

The European authorities can use two levers to help create these European-scale markets: first, by defining common standards (the implementation of the GSM standard in mobile telephony, which fostered the creation of a larger market and favored the emergence of world leaders in Europe) *(Exhibit 43)*; second, by stimulating major innovative advances by developing world-scale demand in areas where public-sector markets play a major role (transportation, energy, environment, security). Part of this market would be reserved for SMEs.

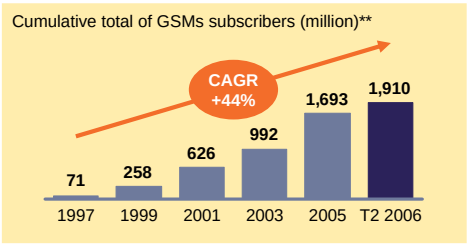
Our proposals for encouraging innovation are not new, but based on a close analysis of industry's needs, we tried to highlight the most relevant levers. The necessary reforms (in the universities, in research, and in corporate and personal taxation) are complex, and politically and culturally sensitive, we hope that our analysis will help to inform a public debate among all the relevant stakeholders.

Exhibit 43: The GSM* standard: an illustration of successful cooperation in developing a substantial global market

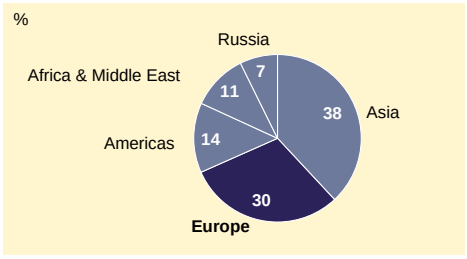
STAGES IN THE DEVELOPMENT OF THE GSM STANDARD

- **Start-up 1982**
  - 1982: launch of the GSM project (to establish a technological standard for mobile communications)
- **Cooperation agreements 1987**
  - 1987:
    - 13 European states commit to developing GSM technology
    - 15 operators set up the GSM Association to jointly develop a standard for cell phone communications
- **Consolidation 1988-2005**
  - 1988: validation of tests successful
  - 1992: first non-European operator signs up to GSM
- **Current situation 2006**
  - 2006: GSM Association brings together some 700 mobile operators and 170 manufacturers and suppliers

GROWTH IN THE NUMBER OF GSM SUBSCRIBERS



BREAKDOWN OF GSM USERS BY GEOGRAPHIC AREA



* Global System for Mobile Communications
** End-of-year figures (end of Q2 for 2006)
Source: GSM Association website

Conclusion

We are convinced that it is possible to put French industry back on the road to competitiveness and attractiveness. The framework that we offer for consideration aims to better articulate the issues faced by each of the sector groups that we have identified and to encourage dialogue between business and government.

The six proposed courses of action—"smart" sector regulation; fluidity of the labor market and employability; Lean initiative; exploitation of market proximity; focusing resources; stimulating and decompartmentalizing innovation—require considerable and coherent long-term commitments by business and government alike at the regional, national, and European levels.

We hope that this study will help clarify thoughts and encourage debates among private and public players during this decisive period for the future of French industry. The task they face is difficult—but the potential rewards are significant.

APPENDICES

Appendix I

Methodological note on the sector segmentation

The segmentation process:

France's industrial sectors were segmented in five steps.

Step 1: A list was drawn up of industrial categories within the scope of the study, using the finest-grain statistical data available (INSEE's NAF 700 categories).

Step 2: The relevant criteria to be used in the segmentation were listed and then grouped into two matrices to facilitate analysis.

The five criteria applied were:

1. **Nature of the competition:** is it based on innovation and product attractiveness, or more on price?

2. **French comparative advantage:** is there a significant difference in cost between imported goods and those produced in France? Are the tangible and intangible assets of companies based in France superior or inferior to those of their overseas competitors?

3. **Need for proximity to market:** is it important for the products to be designed and manufactured near their markets? Do the design, production, distribution and sales functions need to be physically close to each other? Are shipping costs and delivery lead times critical?

4. **Spillover effect:** does the sector create a dynamic likely to benefit activity in other sectors (spreading innovation, induced employment, etc)?

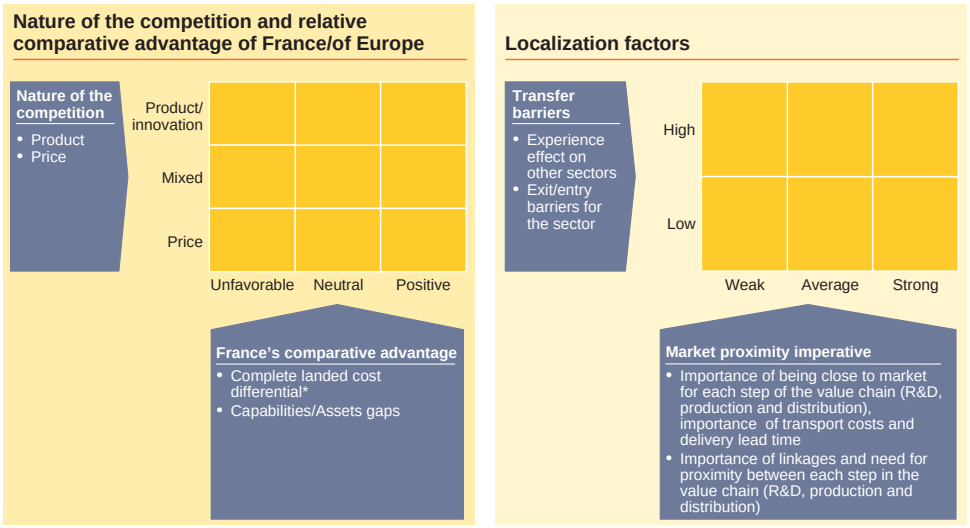
5. **Entry and exit barriers:** are the costs and risks for a company trying to break into – or disengage from – the sector substantial, or even prohibitive?

These five criteria were grouped into two matrices *(see exhibit below)*.

Step 3: All the identified NAF 700 categories were filtered through these criteria and plotted on the matrices

France's industrial sectors were segmented according to their competitiveness and attractiveness characteristics

FRANCE'S INDUSTRIAL SECTORS (NAF 700 CATEGORIES) WERE POSITIONED ON THE MATRICES BELOW:



* Including the potential optimization of costs

Source : McKinsey Analysis

Step 4: Based on the categories' position on the matrices, five groups sharing similar characteristics regarding their competitiveness were identified. These five groups cover the entire spectrum of industry categories.

Step 5: Quantitative verification of the NAF 700 categories' positioning on the matrices and of the pertinence of the identified five groups using two series of indicators:

- Indicators of competitive performance: evolution of the export rate (exports/ production) and exports growth; imports growth and evolution of the import penetration rate (in percent of industrial domestic demand).
- Indicators of economic performance: growth of added value, employment and productivity evolution (added value/Full Time Equivalents).

Listed thereafter are the NAF 700 categories that correspond to each of the groups.

Changes over time

To analyze the performance of the sector groups over time, we posited that the current breakdown of sectors (NAF 700 categories) between the five groups would have been the same in the relatively recent past (the early 1990s). This hypothesis is harder to support for longer periods of time: even if the definition of the five groups remained relevant, the list of sectors in each group would look very different for French industry in the 1950s as compared with today.

International comparisons

To enable international comparisons, we posited that the sector breakdown used for French industry also applied to countries (Germany, United States) used for comparison. For sector data, we drew on international OECD-type data adjusted by the Groningen Institute.

From a chronological viewpoint, in Germany and the United States, as in France, the structural breakdown of industry between the five sector groups identified has not fundamentally changed since 1990.

List of INSEE (NAF700) categories included in each of the five groups

Group 1: Innovation-driven

244C - Manufacturing medicinal products
244D - Manufacturing other pharmaceutical products
283B - Sheet metal working for the nuclear industry
296A - Manufacturing weapons
296B - Manufacturing guns for hunting, target shooting and self-defence
321C - Manufacture of electronic active components
331A - Manufacturing medical imagery and X-ray equipment
331B - Manufacturing medico-surgical equipment
332A - Manufacturing navigational aids
332B - Manufacturing scientific and technical instrumentation
333Z - Manufacturing industrial process-control equipment
352Z - Constructing rolling stock
353A - Constructing aircraft engines
353B - Constructing airframes
353C - Manufacturing launchers and space crafts

Group 2: Strongly branded

182C - Manufacturing made-to-measure clothing
192Z - Manufacturing travel goods and fancy leather goods
221A - Publishing books
221C - Publishing newspapers
221E - Publishing magazines and periodicals
221G - Producing sound recordings
221J - Other publishing activities
245C - Manufacturing perfumes and cosmetics
262A - Manufacturing ceramic items for domestic or ornamental use
334A - Manufacturing glasses
334B - Manufacturing optical instruments and photographic equipment
351E - Constructing pleasure boats
362A - Manufacturing coins and medals
362C - Making jewelery, gold and silver ware
363Z - Manufacturing musical instruments

Group 3: Regional

101Z to 120Z - Mining and agglomerating fossil fuels
131Z and 132Z - Extracting iron ores and non-ferrous metal ores
141A and 141E - Extracting stone for building work and slate
141C - Extracting industrial limestone, gypsum and chalk
142A - Producing sands and granulated powders
142C - Extracting clays and kaolin
143Z and 144Z - Extracting minerals for the chemical industry and natural fertilisers,producing salt
145Z - Other extracting activities
201B - Impregnating wood
202Z - Manufacturing wooden composite boards
203Z - Manufacturing carpentry and builder's joinery items

204Z - Manufacturing wooden packaging
205A - Manufacturing miscellaneous objects in wood
205C - Manufacturing objects in cork, wickerwork or esparto goods
211A and 211C - Producing wood pulp, manufacturing paper and cardboard
212A - Corrugated cardboard industry
212B - Manufacturing cardboard boxes
212C - Manufacturing wrapping
212E - Manufacturing paper items for sanitary or domestic use
212G - Manufacturing stationery
212J - Manufacturing wall papers
212L - Manufacturing other paper or cardboard items
222A - Printing newspapers
222C - Other printing activities (bookworking)
222E - Binding and finishing
222G - Typesetting and photocomposition
222J - Other graphics activities
223A - Reproducing sound recordings
223C and 223E - Reproducing video and computerised recordings
231Z and 233Z - Coking, production and processing nuclear materials
232Z - Refining petrol
241C - Manufacturing colorants and pigments
241E - Manufacturing other basic inorganic chemical products
241G - Manufacturing other basic organic chemical products
241J - Manufacturing nitrogenous products and fertilisers
241L - Manufacturing basic plastics
241N - Manufacturing synthetic rubber
242Z - Manufacturing agrochemical products
245A - Manufacturing soaps, detergents, polishes etc
246G - Manufacturing chemical products for photography
246L - Manufacturing chemical products for industrial use
261A - Manufacturing plate glass
261C - Forming and processing plate glass
261E - Manufacturing glass container ware
261G - Manufacturing glass fibres
261J and 261K - Manuf. and forming glass items for industrial use incl. insulating articles
262C - Manufacturing sanitary articles in ceramics
263Z - Manufacturing ceramic tiles
264A - Manufacturing bricks
264B - Manufacturing tiles
264C - Manufacturing miscellaneous products in terracotta
265A - Producing cement
265C - Producing lime
265E and 266C - Producing plaster and constructional plaster elements
266A - Manufacturing constructional concrete element
266E - Producing ready-to-use concrete
266G - Producing dry mortars and concrete
266J - Manufacturing structures in fibre-cement
266L - Manufacturing other structures in concrete or in plaster
267Z - Stoneworking

268C - Manufacturing other non-metal mineral products
281A - Manufacturing metal assemblies
281C - Manufacturing metal building joinery, doors and windows
282C - Manufacture of metal tanks, reservoirs and containers
282D - Manufacturing radiators and boilers for central heating
283A - Manufacturing steam generators
283C - Sheet metal working and pipeworking
293A - Manufacturing tractors for agricultural application
293C - Repairing agricultural equipment
293D - Manufacturing agricultural equipment
311B - Manufacturing motors, generator and electrical transformers above 750 kW
311C - Repairing electrical equipment
401A - Production of electricity
401C - Transmission of electricity
401E - Distribution and commercialization of electricity
402A - Production of gaseous fuels
402C - Distribution of gaseous fuels
403Z - Production and distribution of heat
410Z - Collection, treatment and distribution of water
B01 - Production, processing and preserving of meat and meat products
B02 - Manufacture of dairy products
B03 - Manufacture of beverages
B04 - Manufacture of grain mill products, starches and starch products, prepared animal feeds

Group 4: At a crossroads

241A - Manufacturing commercial gases
243Z - Manufacturing paints and varnishes
246A - Manufacturing explosive products
246C - Manufacturing adhesives and gelatines
246E - Manufacturing essential oils
246J - Manufacturing data support materials
247Z - Manufacturing synthetic fibers
251A - Manufacturing pneumatic tires
251C - Remolding pneumatic tires
251E - Manufacturing other rubber items
252A - Manufacturing plastic plates, sheets, tubes and sections
252C - Manufacturing plastic packaging
252E - Manufacturing plastic construction elements
252G - Manufacturing miscellaneous plastic items
252H - Manufacturing plastic parts for technical applications
262E - Manufacturing insulators and insulating parts in ceramics
262G and 262J -Manufacturing other ceramic products
262L - Manufacturing refractory ceramic products
268A - Manufacturing abrasive products
272A and 272C - Manufacturing cast and steel tubes
273A - Drawing wire
273C - Cold rolling strips
273E - Cold forming by shaping or folding
273G - Cold wire drawing

284A - Forging, stamping, hot pressing
284B - Cutting out, deep drawing
284C - Powder metallurgy
285A - Treating and surface coating metals
285C - Screw cutting
285D - General engineering
286A - Manufacturing cutlery
286C - Manufacturing hand tools
286D - Manufacturing mechanical tools
286F - Manufacturing locksmith's products and ironmongery
287A - Manufacturing drums and similar metal containers
287C - Manufacturing lightweight metal packaging
287E - Manufacturing items in metal wire
287G - Fastenings, nuts and bolts
287H - Manufacturing springs
287J - Manufacturing chains
287L - Manufacturing metal household items
287N - Manufacturing small metal objects
287Q - Manufacturing other metal objects
291A - Manufacturing motors and turbines
291B - Manufacturing pumps
291D - Manufacturing hydraulic and pneumatic transmissions
291E - Manufacturing compressors
291 F - Manufacturing valves and fittings
291H - Manufacturing bearings
291J - Manufacturing mechanical transmission devices
292A - Manufacturing furnaces and burners
292C - Manufacturing lifts, goods lifts and escalators
292D - Manufacturing equipment for hoisting and handling goods
292F - Manufacturing industrial ventilating and refrigerating equipment
292H - Manufacturing packaging equipment
292J - Manufacturing weighing equipment
292L - Manufacture of machinery for chemistry
292M - Manufacturing other machines for general use
294A - Manufacturing metal machine tools
294B - Manufacturing wooden machine tools
294C - Manufacturing portable, self-powered machines tolls
294D - Manufacturing welding equipment
294E - Manufacturing other machine tools
295A - Manufacturing machines for metallurgy
295B - Manufacture of machinery for mining and quarrying
295D - Manufacture of machinery for construction
295E - Manufacturing machines for the agro-food industry
295G - Manufacturing machines for the textile industries
295J - Manufacturing machines for the paper and cardboard industries
295L - Manufacturing printing machines
295M - Manufacturing machines for working rubber or plastics
295N - Manufacturing moulds and patterns
295Q - Manufacturing machines for automatic assembly

295P - Manufacturing other specialized machines
300C - Manufacturing computers and other computer hardware
312A - Manufacturing low voltage electrical switchgear or controlgear
312B - Manufacturing high voltage electrical switchgear or controlgear
321A - Manufacturing passive components and capacitors
321D - Manufacture of circuit cards on a fee and contract basis
322A - Manufacturing transmission and radio broadcasting equipment
322B - Manufacturing telephony equipment
341Z - Constructing cars
342A - Manufacturing bodywork for cars
342B - Manufacturing caravans and leisure vehicles
343Z - Manufacturing car equipment
354A - Manufacturing motorcycles
354E - Manufacturing vehicles for disabled persons
B05 - Manufacture of other food products
B06 - Manufacture of tobacco products

Group 5: Highly exposed

171A - Spinning for the cotton industry
171C - Spinning for the wool industry, carding cycle
171E - Preparing wool
171 F - Spinning for the wool industry, combing cycle
171H - Preparing and spinning linen
171K - Throwing and texturing silk and synthetic textiles
171M and 171P - Producing sewing thread, preparing and spinning other fibres
172A - Weaving for the cotton industry
172C - Weaving for the wool industry, carding cycle
172E - Weaving for the wool industry, combing cycle
172G - Weaving silks
172J - Weaving other textiles
173Z - Dyeing and ennobling textile
174A - Producing household linen and furnishings
174B - Producing small textile bedding articles
174C - Producing other articles made out of textile
175A - Producing rugs and carpets
175C - Manufacturing twine rope and netting
175E - Producing non-woven fabrics
175G - Other textile industries
176Z - Producing knitted fabrics
177A - Producing knitted footwear
177C - Producing pullovers and similar items
181Z - Manufacturing leather clothing
182A - Manufacturing professional and work clothing
182D - Manufacturing over garments for men and boys
182E - Manufacturing over garments for women and girls
182G - Manufacturing underclothes
182J - Manufacturing other items of clothing and accessories
183Z - Fur industry
191Z - Dressing and tanning leather

193Z - Manufacturing footwear
244A - Manufacturing basic pharmaceutical products
271Y - Iron and steel industry (ECSC)
274A and 274M - Producing precious metals, metallurgy of other non-ferrous metals
274C - Producing aluminum
274D - Basic working of aluminum
274F and 274G - Producing and basic working of lead, zinc or tin
274J and 274K - Producing and basic working of copper
275A - Casting iron
275C - Casting steel
275E - Casting lightweight metals
275G - Casting other non-ferrous metals
297A - Manufacturing household appliances
297C - Manufacturing non-electric household appliances
300A - Manufacturing business machines
311A - Manufacturing motors, generator and electrical transformers below 750 kW
313Z - Manufacturing insulated wires and cables
314Z - Manufacturing accumulators and batteries
315A - Manufacturing lamps
315B - Manufacturing autonomous electrical safety equipment
315C - Manufacturing lighting equipment
316A - Manufacturing electrical equipment for engines and vehicles
316C - Manufacturing industrial electromagnetic equipment
316D - Manufacturing other electrical equipment
323Z - Manufacturing equipment for the reception, recording and reproduction of sound
335Z - Clock and watch making
351A - Constructing warships
351B - Constructing civil ships
351C - Naval repairs
354C - Manufacturing bicycles
355Z - Manufacturing other transport vehicles
361A - Manufacturing seats
361C - Manufacturing office and shop furniture
361E - Manufacturing kitchen furniture
361G - Manufacturing domestic furniture
361H - Manufacturing garden and outdoor furniture
361J - Manufacturing other furniture
361K - Industries associated with furnishings
361M - Manufacturing mattresses
364Z - Manufacturing sports equipment
365Z - Manufacturing games and toys
366A - Costume and fantasy jewelery
366C - Brush-making industry
366E - Other manufacturing industries n.e.c.

Appendix II

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Appendix III

List of Exhibits from the summary report

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